Tyan MicroServer Series

FM65-B5511 / FM65-B8001

4U SERVER – 18 NODES

User's Manual

Revision History

Refer to the table below for the updates made to this user's manual.

Revision No.	Draft Date	Note

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Version 1.0a

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Conventions

The following conventions are used in this manual:

⚠ WARNING:
Indicates a potential for property damage, personal injury or death.

⚠ CAUTION:
Indicates a potential loss of data or damage to equipment.

⇒ NOTE:
Indicates information that is important to know for the proper completion of a procedure, choice of an option, or completing a task.

Overview 1-1

About the Tyan MicroServer System 1-1
Features 1-1
Product Models 1-6
Catalog Parts List 1-6
Contents 1-6
Accessories 1-6

About Your System 2-1

Necessary Information 2-1
Safety Information and Precautions 2-1
Recycling Information 2-2
General Information 2-2
Work Area 2-2
Recommended Equipment 2-2
System Overview 2-3
System Front View 2-4
System Rear View 2-4
System Internal View 2-5
Compute Blade Overview 2-6
Features 2-6
FM65-B5511 Blade 2-6
FM65-B8001 Blade 2-7
Compute Blade LED Behavior 2-8
Mid Plane 2-9
Pass-through / CMM Module Overview 2-10
Pass-through / CMM LED Behavior 2-11
I/O Connectivity 2-11
I/O Port Mapping 2-11
Mounting the System into a 4-Post Rack 2-12
Preparing for the Installation 2-12
Installing the Inner Rail 2-12
Installing the Outer Rail 2-13
Installing the System using the 4-Post Rack Kit 2-13

Chassis Management Module 3-1

Acquiring an IP Address 3-1
Chassis Management Console 3-3
Overview 3-3
System Information 3-4
Server Health 3-4
Configuration 3-5
Remote Control 3-6
Maintenance 3-7
GroupBMC 3-7

Compute Blade Components 4-1

Introduction 4-1
Disassembly Flowchart 4-1
Compute Blade, Power Supply & Fan Module Order Identification 4-2
Compute Blade Numbering 4-2
Compute Blade Blanks (Option) 4-3
Removing a Compute Blade Blank 4-3
Installing a Compute Blade Blank 4-3
Compute Blade Modules 4-4
Removing a Compute Blade 4-4
Installing a Compute Blade 4-4
System Memory 4-5
General Guidelines 4-5
Population Rules 4-5
Installing a Memory Module 4-5
Removing a Memory Module 4-5
Hard Drives 4-7
Installing a Hard-Drive 4-7
Removing a Hard Drive 4-8
Processors 4-9
General Guidelines 4-9
Removing a Processor 4-9
Installing a Processor 4-11
Heat-Sinks 4-13
General Guidelines 4-13
Installing a Heat-Sink 4-13
Removing a Heat-Sink 4-13
System Board 4-15
Removing a Bridge Board 4-15
Installing a Bridge Board 4-15
Removing a System Board 4-16
Installing a System Board 4-17

Chassis Components 5-1

Introduction 5-1
Disassembly Flowchart 5-1
System Power Guidelines 5-2
Removing a Power Supply Module 5-3
Installing a Power Supply Module 5-3
Fan Modules 5-4
Removing a Fan Module 5-4
Installing a Fan Module 5-4
Opening and Closing the System 5-5
Opening the Top Cover 5-5
Closing the Top Cover 5-5

Pass-through / CMM Module 5-6
Removing Pass-through / CMM Module 5-6
Installing Pass-through / CMM Module 5-6
Removing an I/O and CMM System Board 5-7
Installing an Pass-through / CMM System Board 5-8
Troubleshooting the MicroServer 6-1
Safety First 6-1
Start-up Routine 6-1
Checking Equipment 6-1
Troubleshooting External Connections 6-1
System Alert Messages 6-1
Troubleshooting Chassis Components 6-1
PSM 6-1
Fans 6-1
CMC 6-1
Pass-through / CMM Module 6-1
Troubleshooting Compute Blade Components 6-2
Memory 6-2
Hard Drives 6-2
Processors 6-2
System Board 6-2
System Diagnostics 6-2
Administrator Diagnostics 6-2
System Diagnostics 6-2
Using System Diagnostics 6-2
Running System Diagnostics 6-2
Testing Options 6-3
Error Messages 6-3
Parts Listing 7-1
Getting Help and Support A-1
Technical Support A-1
Safety Information B-1
General Safety B-1
Electrical Safety B-1
Safety Notices B-2
Glossary C-1
Index D-1

Chapter 1: Overview

About the Tyan MicroServer System

Congratulations on the purchase of the Tyan MicroServer, a highly optimized 4U rack mount system. The Tyan MicroServer is available in two models, the FM65-B5511 featuring the Intel® Sandy Bridge-DT processor and the FM65-B8001 featuring the AMD® Opteron AM3 processors, designed to support 18 compute blades. Up to 32 GB UDIMM DDR3-800/1066/1333 memory can be installed per node. Utilizing advanced technology the Tyan MicroServer system provides scalable 32/64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus capabilities. The Tyan MicroServer not only can be utilized to manage today's IT environments as well as tomorrow's.

The Tyan MicroServer uses the latest chassis designs for solid mechanical enclosures and robust features. The Tyan MicroServer delivers the power and flexibility to meet the needs enterprise-level requirements.

Features

The Tyan MicroServer contains the following features:

Table 1-1. MicroServer Features

Item	Description
Chassis	● Industry 4U rack-mountable chassis ● Dimension: ■ Height: 175.7 mm (7.17 inch) ■ Width: 440 mm (17.32 inch) ■ Depth: 650 mm (25.6 inch) ● (18) Compute Blades(1) Pass Through/CMM module ● (8) 8038 System FANs ● Power supply ■ (2+1) 800W high efficiency (80+ Gold) w/ PFC (AC SKU) ■ DC 12V sourced from rack (DC SKU, option)
System board	Tyan B5511GM2N, B8001GM2N
Processors	FM65-B5511 ● Support (1) Intel® Sandy-Bridge-DT CPU (Socket H2) ● Quad-core Sandy Bridge-DT w/ TDP 45W ● Dual-core Sandy Bridge-DT w/ TDP 20W FM65-B8001 ● Support (1) AMD® Opteron AM3 socket ● Athlon II X2 Dual-Core CPU (45W) ● Athlon II X3 Tri-Core CPU (45W) ● Athlon II X4 Quad-Core CPU (45W)

Table 1-1. MicroServer Features (Continued)

Item	Description
Chipset	FM65-B5511 ● Intel® Cougar Point PCH ● AST2150 iBMC FM65-B8001 ● AMD SR5650 + SP5100 ● AST2150 iBMC
Memory	FM65-B5511, FM65-B8001 ● (4) U-DDR-III w/ECC 1066/1333 VLP UDIMM
Integrated LAN Controllers	(2) Intel® 82574L Gigabit controllers
BIOS	● AMI BIOS® on 8Mbit Flash ROM ● Supports ACPI 2.0 ● Supports boot from USB device ● Power-on mode control for AC power loss recovery
Internal Connector	● (1) One SATA connector for 2.5” SATA/SATAII hard drive on the motherboard ● (1) One SATA connector for 2.5” SATA/SATAII hard drive on the Bridge Board
Internal I/O	● (2) USB ports ● (1) VGA port ● Switches ■ Power ● LED ■ Power LED ■ Hard drive activity LED ■ System health/ID LED
Form Factor (Compute Blade)	W128.88 x H28 x D358.8 mm (5.07 x 1.10 x 14.13 inch) **NOTE:** Supports 9 mm high hard drive.

Table 1-1. MicroServer Features (Continued)

Item	Description
Pass-through-M1902F65-CMMPT	• Gigabit PHY ▪ (2) BCM 54616s GPHY ▪ (2) Octal Giga PHY (BCM54980) • CMM subsystem ▪ (1) ASPEED AST2150 ▪ (1) 8 MB FLASH • Rear I/O ▪ (1) RJ45 to support remote management from CMM ▪ (18) RJ45 1000 Base-T port w/ activity LED ▪ (1) One Power Switch ▪ (1) Power LED ▪ (1) System Health LED • Form factor: W108 mm x L358.4 mm (4.25 in x 14.11 inch)
Mid-Plane (M1247F65-BP)	• System management ▪ (1) CMM connector for IPMB ▪ (4) I2C switch for I2C Bus extender ▪ (4) Power connector (PDB) • Blade connection ▪ (18) PCI-E x 8 connector • H/W Monitor ▪ (4) System temperature sensor with SMBUS • Form Factor: W435 mm x L165 mm (17.13 in x 6.50 inch)
PDB Board (M1608F65-PDB)	• Power Rating SPEC ▪ 1600W Power output rating (2+1 Redundant PSU) • PSU Power Input ▪ (3) System PSU comply connectors ▪ 12DC power input from Chassis Power delivery system ▪ 12V and 12Vsb power input • Blade System DC power input ▪ DC power Connector ▪ 12V DC power input from chassis delivery system • Power output ▪ (4) Power connector for Blade power ▪ 12V DC power • Form Factor: W176.5 mm x L150 mm (6.95 in x 5.91 inch)
Bridge Board (M1708F65-BDG)	• One(1) SATA connector for 2.5" SATA/SATAII hard drive • Form factor: W118.88 mm x L96.8 mm (4.68 in x 3.81 inch)

Table 1-1. MicroServer Features (Continued)

Item	Description
CMM	● Dedicated LAN port for chassis management ● Remote management & monitoring ■ System Blades ● Blade Present status ● Blade Power On/Power Off ● Blade Power Stagger Start-up ● Blade Reset ● Blade Graceful Shutdown ● Blade identify (LED on/off) ■ Power Supplies ● Power Present status ● Power Status (on or off) ■ Cooling fans ● FAN speed control & monitor ● FAN failed alert ■ Networking switches (option) ● Reset Ethernet Switch ● Gigabit Switch Management UI Links ● H/W Healthy Monitor (Blade/Chassis/PSU module/FAN module): ■ System Healthy monitor (Temperature sensors, power status and FAN speed) ■ System Event Log ● Advance Control ■ Power Fail alert. ■ Power consumption Monitor (AC-in/DC-in/DC-out) ● IPMI 2.0 MANAGEMENT Through LAN or I2C ● E-MAIL report ● Chassis Graceful Shutdown

Table 1-1. MicroServer Features (Continued)

Item	Description
Blade BMC	● Remote management & monitoring ■ System Blades ● Blade Power On/Power Off ● Blade Reset ● Blade Graceful Shutdown ● Blade identify (LED on/off) ● H/W Healthy Monitor: ■ System Healthy monitor (Temperature sensors, and voltages) ■ System Event Log ● IPMI 2.0 MANAGEMENT Through LAN or I2C ● iKVM ● Serial Over LAN (SOL) ● Virtual Media Over LAN ● Email report ● Chassis Graceful Shutdown
Operating Environment	Operating Temperature ■ 10°C to 35°C Non-Operating Temperature ● FM65-B5511 ■ -40°C to 70°C ● FM65-B8001 ■ -40°C to 70°C Operating Humidity ● FM65-B5511 ■ 10% to 80% ● FM65-B8001 ■ 15% to 80% (non-condensing) at 40°C Non-Operating Humidity ● FM65-B5511 ■ 5% to 95% ● FM65-B8001 ■ 8% to 80% (non-condensing) at 40°C

Product Models

The system board within the Tyan MicroServer blades contain different processors and chipsets, which are defined by the following models:

- FM65-B5511-Intel based platform
- FM65-B8001-AMD based platform

Catalog Parts List

Contents

FM65 Chassis Kit

- (1) 4U Chassis
- (1) Pass-through / CMM module
- (8) Fan Modules
- (3) Power Supply Modules
- (1) Power Distribution Board (M1608F65-PDB)
- (1) Mid Plane Board (M1247F65-BP)

Compute Blade Single Kit

- (6) Compute Blade Blanks
- (6) Tyan System Boards configured for the FM65-B5511 and FM65-B8001 models
- (6) Bridge Boards (M1708F65-BDG)
- (6) Heat-sinks
- (1) HDD Screw Kit

Accessories

- Rail Mounting Kit

Accessory Kit

- (3) US Power Cord
- (3) EU Power Cord
- (1) USB Cable
- (1) Rail Screw

Chapter 2: About Your System

Necessary Information

Safety Information and Precautions

Before installing and using Tyan MicroServer, review the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock.
- Do not place anything on the power cord. Place the power cord where it will not cause an accident.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that parts specified by the manufacturer are used.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Components and circuit boards can be damaged by static electricity discharge. Follow the guidelines below to avoid damage to the system or bodily injury.

Proper grounding is required before removing the top cover of the system. Disconnect the power cable from the power supply and then touch a grounded object to release static charge. A grounded wrist strap is recommended during any maintenance or troubleshooting to the system. To ensure proper handling of the components, refer to the following guidelines:

- Avoid touching system board components, IC chips, connectors memory modules and leads.
- The system board is pre-installed in the system. When removing the system board, always place it on a grounded anti-static surface until it is ready to be reinstalled.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex, bend or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing components and devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Recycling Information

A lithium battery is included with the Tyan MicroServer. Do not puncture or dispose of battery in fire. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Disposal and recycling of used batteries, parts and components should be done in accordance with local regulations.

General Information

The illustrations are representative of the latest system revision available at the time of publishing. The system you receive may not look exactly like the illustrations described later.

Work Area

All maintenance and/or troubleshooting of the Tyan MicroServer should be conducted in a stable, clean working environment. Use containers to store small components separated, which prevents them from becoming lost or mixing with other components. The use of proper tools and adequate lighting is recommended.

Recommended Equipment

The following tools are suggested to perform maintenance on the Tyan MicroServer:

- Phillips screwdriver
- Wrist-grounding strap or conductive mat/anti-static pad

System Overview

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or services that are not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

The Tyan MicroServer contains components that can be removed and replaced. The following image indicates the location of the components that can be removed, which are further described in detail in Chapters 5 and 6 of this user's manual.

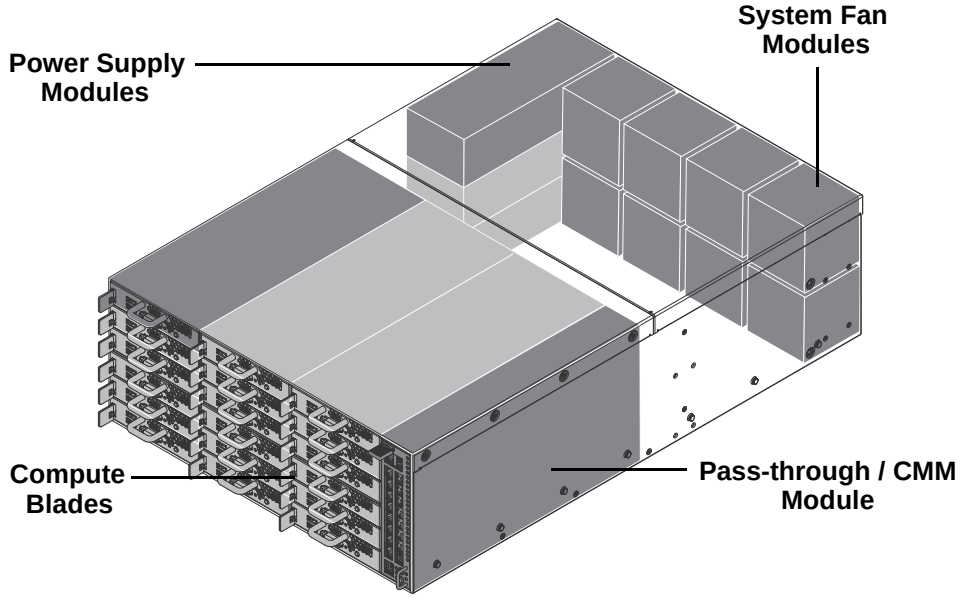


Figure 2-1. Tyan MicroServer Overview

System Front View

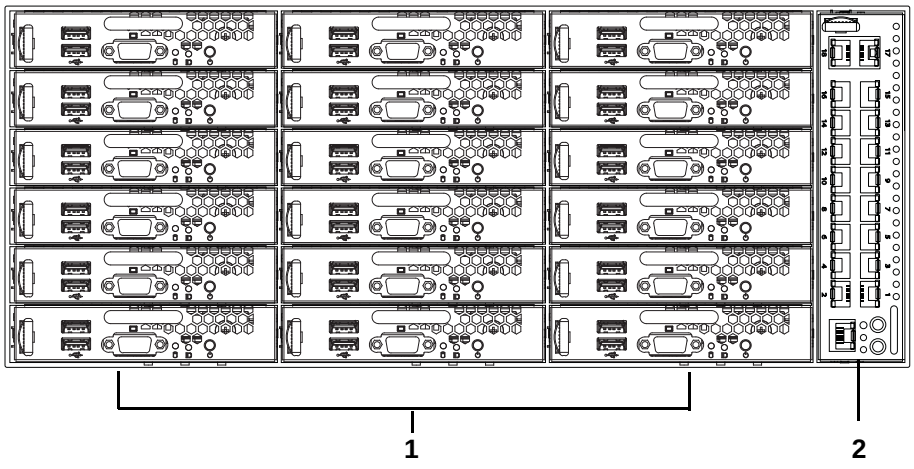


Figure 2-2. Front View

Table 2-1. System Front View Modules

ID	Description
1	Compute Blade (x18)
2	Pass-through / CMM Module

System Rear View

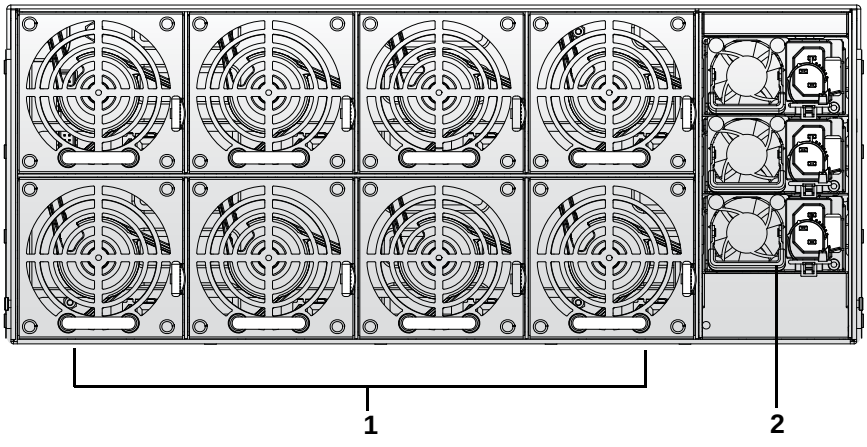


Figure 2-3. Rear View

Table 2-2. System Rear View Modules

ID	Description
1	Fan Modules (x8)
2	Power Supply Modules (2+1)

System Internal View

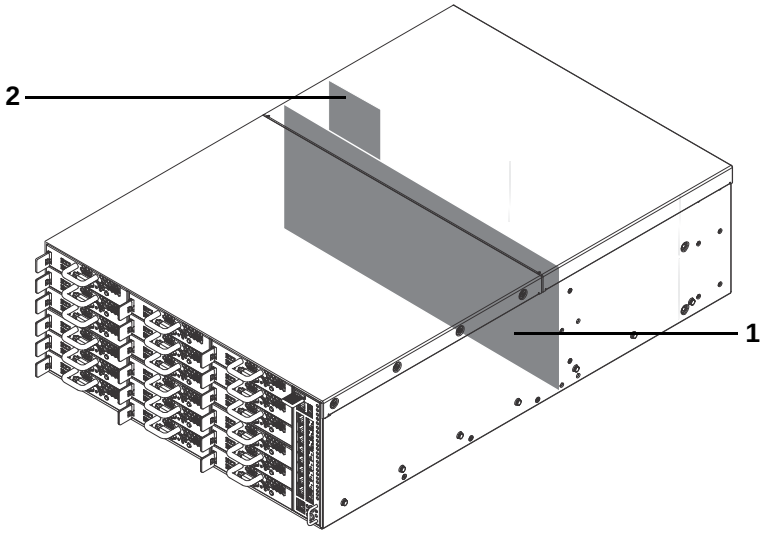


Figure 2-4. Internal View

Table 2-3. System Internal View Modules

ID	Description
1	Mid Plane (M1247F65-BP): 18x PCI-e x 8 connector)
2	Power Distribution Board (PDB): M1608F65-PDB

Compute Blade Overview

Features

FM65-B5511 Blade

- (1) Intel® Sandy Bridge DT, Socket H2, Intel E3 series CPU
- Intel® Cougar Point PCH

FM65-B8001 Blade

- (1) AMD® Opteron AM3 socket
- AMD SR5650 + SP5100

Common Features

- Compact compute blade: 118.88 mm X 263.52 mm(4.68 in x 10.37 inch)
- AST2150 iBMC
- (4) DDR3 VLP UDIMM slots (up to 32 GB)
- (2) Internal 2.5” hard drive bays (with connected bridge board)
- (2) Intel® 82574L Gigabit controllers

FM65-B5511 Blade

Front View

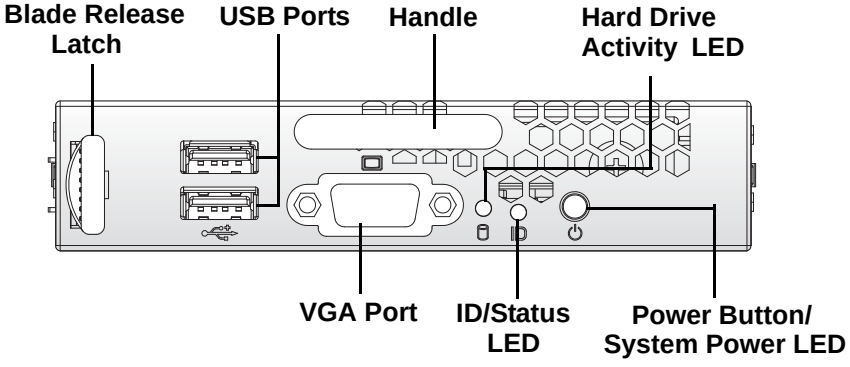


Figure 2-5. FM65-B5511 Blade Front View

Internal View

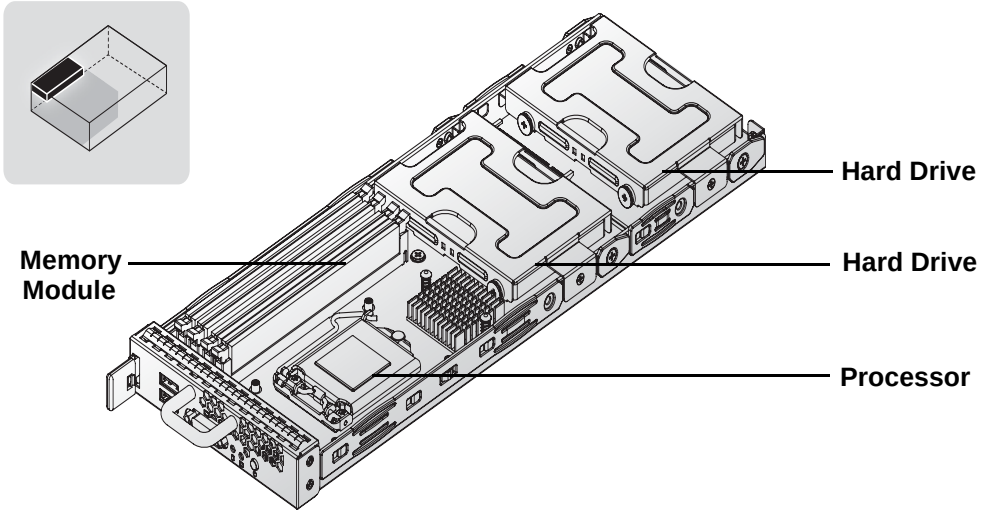


Figure 2-6. FM65-B5511 Blade Internal View

FM65-B8001 Blade

Front View

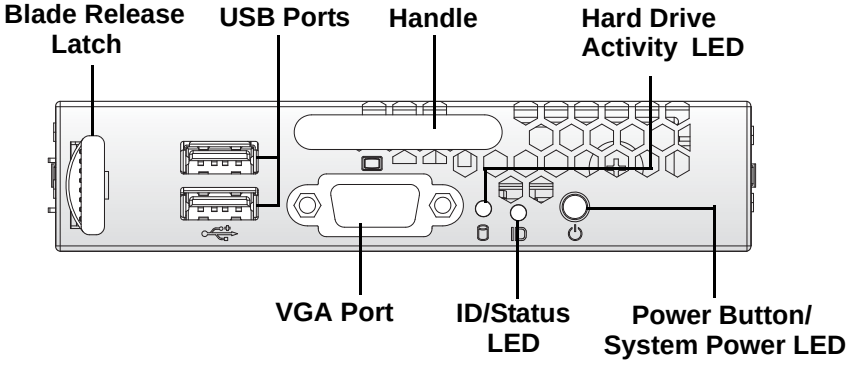


Figure 2-7. FM65-B8001 Blade Front View

Internal View

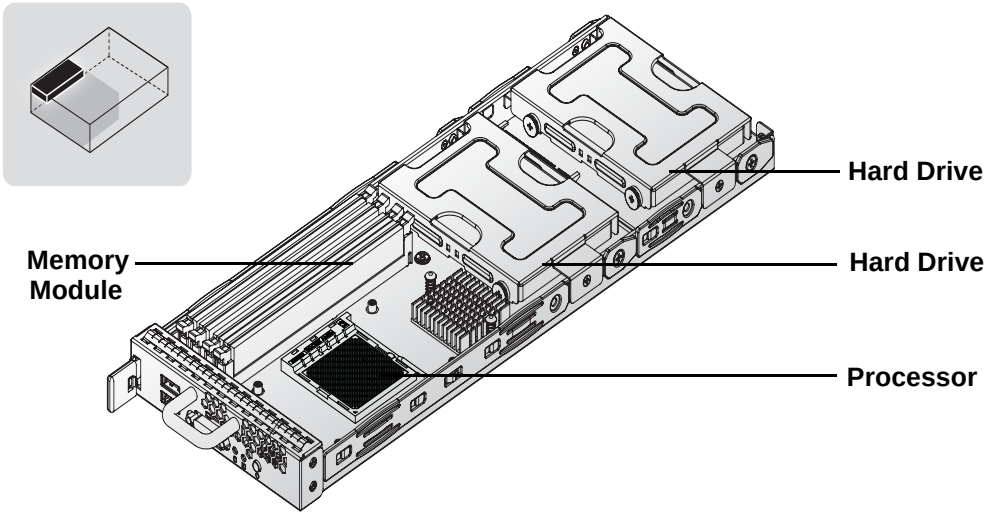


Figure 2-8. FM65-B8001 Blade Internal View

Compute Blade LED Behavior

The following information provides LED behavior for both compute blade models.

Table 2-4. Compute Blade LED Behavior

Field	Color	Behavior
HDD Activity	Blinking Green	Access
	Off	System normal
ID	Solid blue	Active
System Status	Solid Red	Alert
	Off	Normal
ID/System Status	Blinking blue/red	ID located/System Alert
System Power	Solid Green	Power on
	Off	Power off

Mid Plane

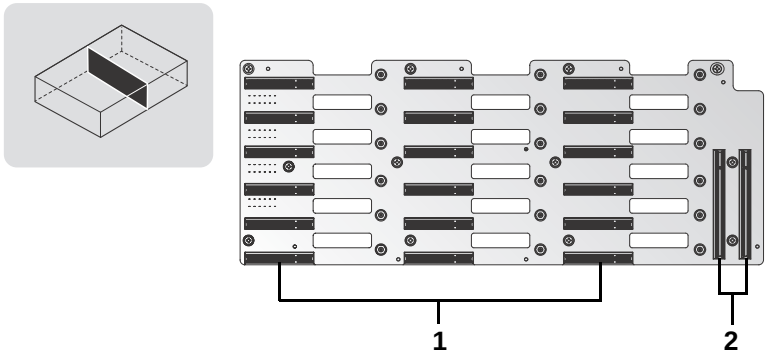


Figure 2-9. Mid Plane Front View

Table 2-5. Mid Plane Front View

ID	Description
1	PCI-E x8 connectors (x18)
2	PCI-E x16 connectors (x2)

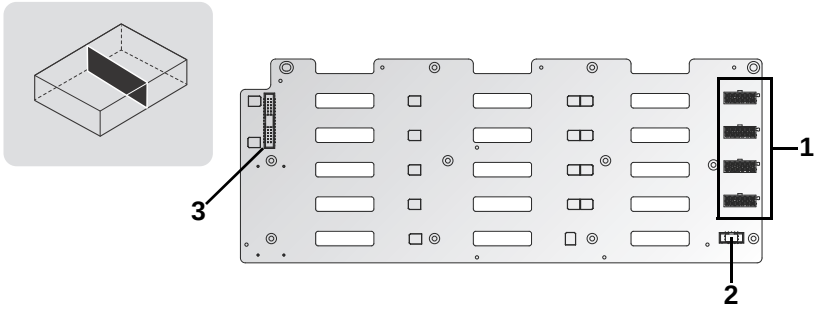


Figure 2-10. Mid Plane Rear View

Table 2-6. Mid Plane Rear View

ID	Description
1	2 x 6 PIN Power connector (x4)
2	2 x 5 PIN I2C connector
3	2 x 15 PIN FAN connector

Pass-through / CMM Module Overview

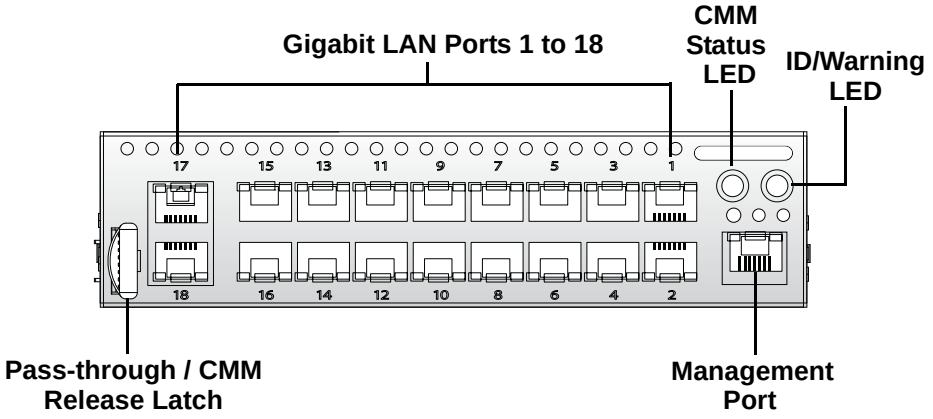


Figure 2-11. Pass-through / CMM Module Front View

- Dedicated LAN port for chassis management
- Remote management & monitoring
  - System Blades
    - Blade Present status
    - Blade Power On/Power Off
    - Blade Power Stagger Start-up
    - Blade Reset
    - Blade Graceful Shutdown
    - Blade Identify (LED on/off)
  - Power Supplies
    - Power Present status
    - Power Status (on or off)
  - Cooling fans
    - FAN Speed Control & Monitor
    - FAN failed alert
  - Networking switches
    - Reset Ethernet Switch
    - Gigabit Switch Management UI Links
- H/W Healthy Monitor (Blade/Chassis/PSU module/FAN module):
  - System Healthy Monitor (Temperature sensors, power status and FAN speed)
  - System Event Log
- Advance Control
  - Power Fail alert.
  - Power consumption Monitor (AC-in/DC-in/DC-out)

- PMI 2.0 MANAGEMENT Through LAN or I2C
- E-MAIL report
- Chassis Graceful Shutdown

Pass-through / CMM LED Behavior

The following information provides LED behavior for both compute blade models.

Table 2-7. Pass-through / CMM LED Behavior

Field	Status	Color	Indication	Address	Remark	Event Log
CMM Status LED	CMM ready	Green	Solid on	GPIOA4/PHYLINK	Either Red or Green LED is on, not both.	Must
	CMM fail	Red	Solid on	GPIOA5/PHYPD#		
ID LED	ID located	Blue	Solid on	GPIOB5/VBCK		
Warning LED	System fan fail	Red	Solid on	VPAVSYNC/VSYNC/GPIOH5	Fan fail Abnormal fan speed	Must
Warning LED	PSU fail	Red	Solid on	VPAVSYNC/VSYNC/GPIOH5	OVP, OCP, OTP, AC lose PSU fan fail PSU asserted, AC on, no Vsb	Must
Warning LED	2+1 PSU redundancy fail	Red	Solid on	VPAVSYNC/VSYNC/GPIOH5	Single PSU failure triggers warning display	Must

I/O Connectivity

I/O Port Mapping

Compute Blade I/O Ports

- (2) USB ports
- (1) VGA port

Pass-through / CMM Module Ports

- (1) RJ45 to support remote management from CMM
- (1) 2x8 ports RJ45 1000 Base-T port w/ activity LED
- (1) 2x1 ports RJ45 1000 Base-T port w/ activity LED

Mounting the System into a 4-Post Rack

After installing the necessary components, the Tyan MicroServer can be mounted in a 4-post rack using the optional rail kit.

The rail kit includes the following items:

- (2) Rail kit assemblies
- (1) Set of screws

Preparing for the Installation

- Review all the tasks required to install and configure the system.
- Review the electrical requirements and power supply input voltage information.
- Examine the system's shipping kit contents and assemble the required tools for installation.
- Review ESD requirements and take safety precautions.
- Before installing the system into a rack, install any optional components into the system.
- Stabilize the rack before installing the system, if necessary.

Installing the Inner Rail

⚠ WARNING:

Use caution when removing the inner rail from the rail kit assembly. The rails can slide out and cause personal injury or damage to the TYAN MicroServer.

1. Remove the inner rail from the rail kit assembly.
2. Align and insert the holes on the inner rail into the pins on the side of the chassis. (Figure 2-12)
3. Slide the inner rail until the latch key on the rail locks and is secure to the chassis.
4. Repeat steps 1 through 3 for the remaining side.

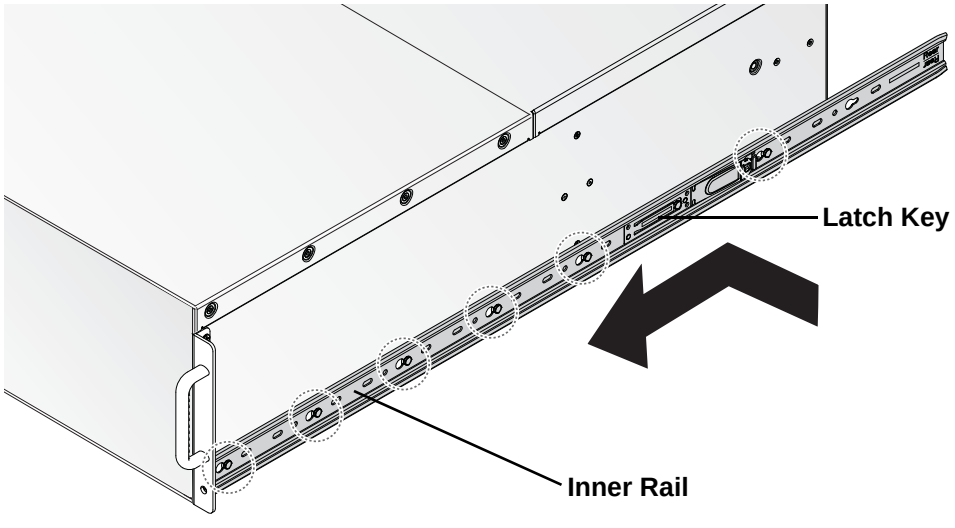


Figure 2-12. Installing the Inner Rail

Installing the Outer Rail

⚠ WARNING:

Use caution when installing the outer rail. The middle rail, which is attached to the outer rail, can slide out and cause personal injury or damage to the system.

1. Align and place the front mounting bracket of the outer rail on the front cabinet column of the rack. (Figure 2-13)
2. Extend the length of the outer rail until the rail reaches the rear cabinet column of the rack
3. Align and place the rear mounting bracket on the rear cabinet column of the rack.

⇒ NOTE:

4. Secure the outer rail to the rack with the screws and washers to the front and rear of the rack.

⇒ NOTE:

The outer rails contain the words “FRONT” and “REAR”. The “FRONT” of the outer rail must be placed towards the front of the rack and “REAR” must be placed towards the rear.

⚠ CAUTION:

Both outer rails must be aligned evenly or the chassis cannot be installed to the rack. Use a ruler to ensure that both rails are evenly aligned in a 180 degree angle.

5. Repeat steps1 through4 for the opposite side.

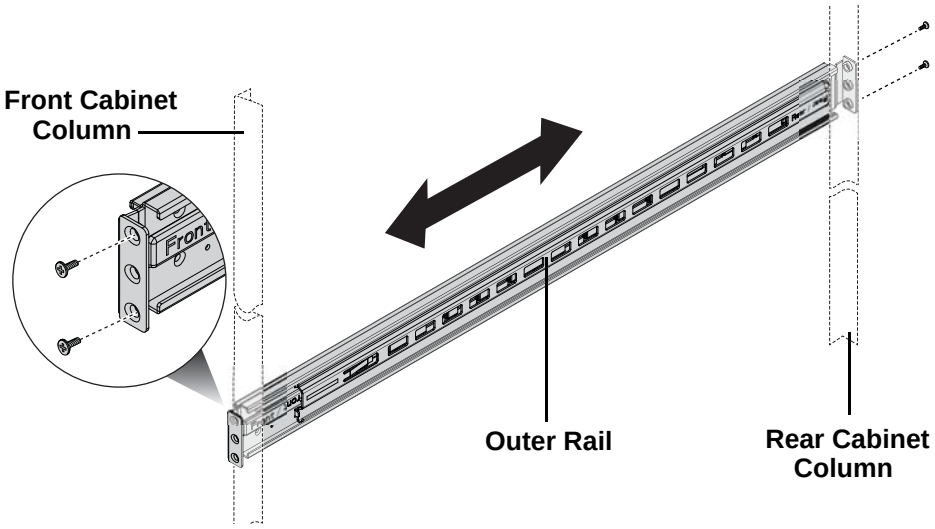


Figure 2-13. Installing the Outer Rail

Installing the System using the 4-Post Rack Kit

⚠ WARNING:

Due to the weight of the system, two people are required to lift and mount the system into a rack enclosure when following the procedure.

Prerequisite:

Remove all compute blades from the chassis. Refer to Removing a Compute Blade.

Remove the Pass-through / CMM module. Refer to Removing Pass-through / CMM Module.

Remove the power supply modules. Refer to Removing a Power Supply Module.

1. Lift the chassis until it is leveled with the outer rails on the rack. (Figure 2-14)
2. Align the left and right side of the inner rail on the chassis with the outer rails on the rack.
3. Insert the rear side of the chassis into the rack until the inner rails and outer rails lock into place.
4. Secure the chassis to the rack by installing (2) screws from the mounting flanges to the rail.
5. Install the compute blades into the chassis. Refer to Installing a Compute Blade.

⚠ CAUTION:

Compute blades should be installed in the order shown in Compute Blade, Power Supply & Fan Module Order Identification.

6. Install the Pass-through / CMM module into the chassis. Refer to Installing Pass-through / CMM Module.
7. Install the power supply modules. Refer to Installing a Power Supply Module.

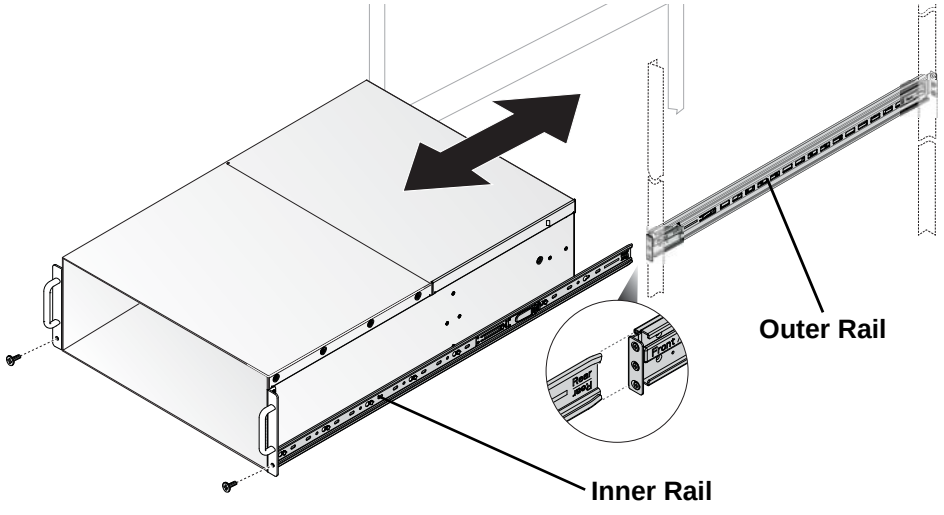


Figure 2-14. Installing the System to a 4-Post Rack

Chapter 3: Chassis Management Module

This chapter provides information about the chassis management console. To login remotely into the chassis management module (CMM) and access the console, you must first acquire the CMM's IP address.

Acquiring an IP Address

This section provides information in order to acquire an IP address for use in setting up and configuring the Chassis Management Module (CMM).

Before you start, make sure all compute blades and the CMM are connected to the network through a DHCP server (recommended).

1. Power up the MicroServer.

All MicroServer blades are powered on by the system through the BMC.

2. Connect a monitor and keyboard to an active compute blade. See "FM65-B5511 Blade" on page 6 or "FM65-B8001 Blade" on page 7 for port locations.
3. In the POST screen, navigate to Server Management and look for the compute blade BMC IP address

NOTE:

Note the BMC IP address is assigned by the DHCP server.

4. Connect a remote computer to the same network used by the MicroServer.
5. In the remote computer, open a browser and in the address bar type the BMC IP (See step 3).
6. In the login screen, type in the following username and password for both CMM and BMC.

username*: root*
password: *superuser*

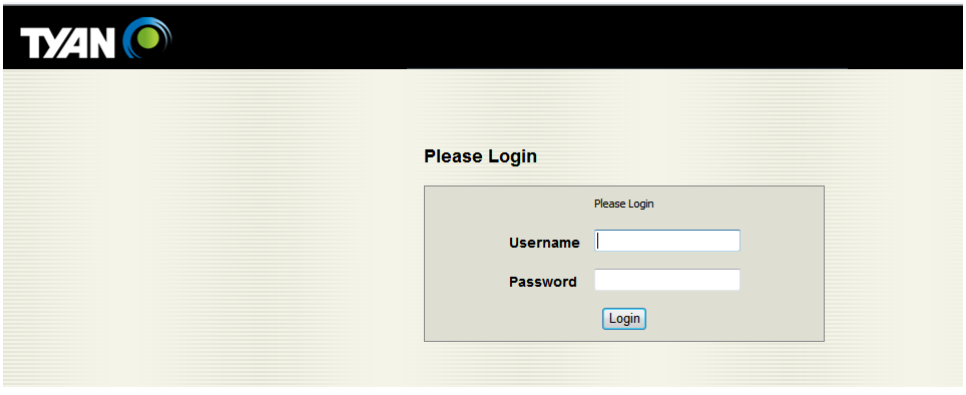


Figure 3-1. Login Menu

NOTE:

Passwords are case sensitive.

7. Select ***Group BMC***=> ***Node BMC***.

CMM IP displays in the ***Select GroupBmc*** drop down list.

NOTE:

Note that CMM IP must be in the same subnet as the MicroServer Blade BMC. An IP address result such as *127.0.0.1* is not valid and typically indicates there is a configuration error between the CMM BMC and compute blade node. It may be necessary to wait for a short period to allow for network settings to take place before beginning troubleshooting steps.

Chassis Management Console

Overview

This section displays the initial screen information.

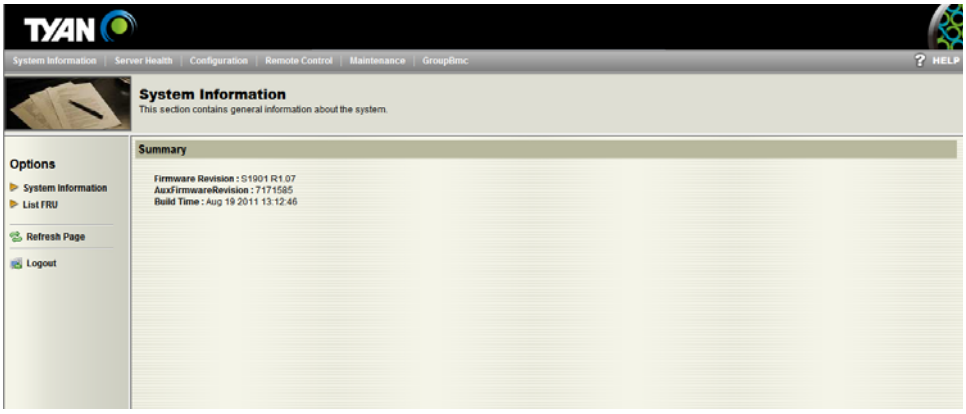


Figure 3-2. Management Console Menu

Table 3-1. Management Console

Item	Description
Options	Displays available submenus.
Refresh	Refresh the current menu.
Logout	Select to logout.

System Information

The System Information menu provides general system information about the MicroServer system.

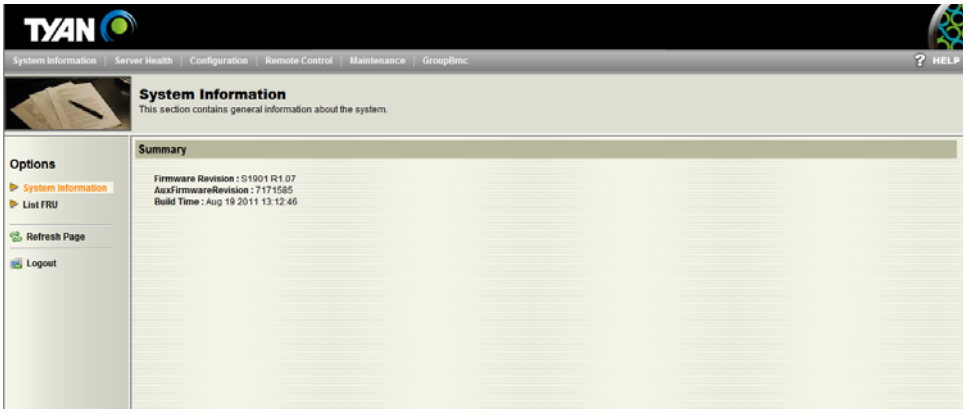


Figure 3-3. System Information Menu

Table 3-2. System Information

Item	Description
System Information	Displays firmware and AuxFirmware revision as well as build time information
List FRU	Displays available field replacement units (FRU) in the MicroServer. Further information for each FRU item is available by clicking on the FRU item.

Server Health

The Server Health menu provides information about the MicroServer system's sensor readings and event logs.

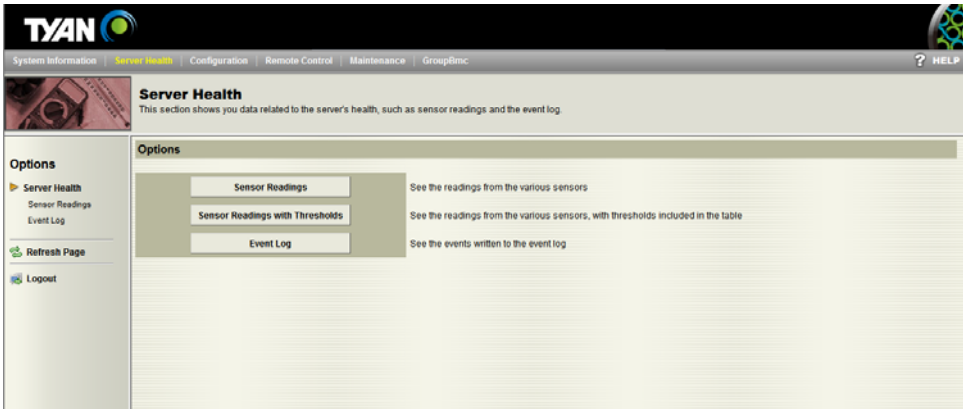

TYAN
System Information | Server Health | Configuration | Remote Control | Maintenance | Group8mc
HELP
Server Health
This section shows you data related to the server's health, such as sensor readings and the event log.
Options
Server Health
Sensor Readings
Event Log
Refresh Page
Logout
Options
Sensor Readings
See the readings from the various sensors
Sensor Readings with Thresholds
See the readings from the various sensors, with thresholds included in the table
Event Log
See the events written to the event log

Figure 3-4. Server Health Console Menu

Table 3-3. Server Health

Item	Description
Sensor Readings	Select to display readings with or without thresholds from various MicroServer sensors.
Event Log	Select to view the written event logs by Sensor-Specific, BIOS Generated, or System Management Software events.

Configuration

The Configuration menu provides information for alert, user and network settings to configure and setup the MicroServer system.

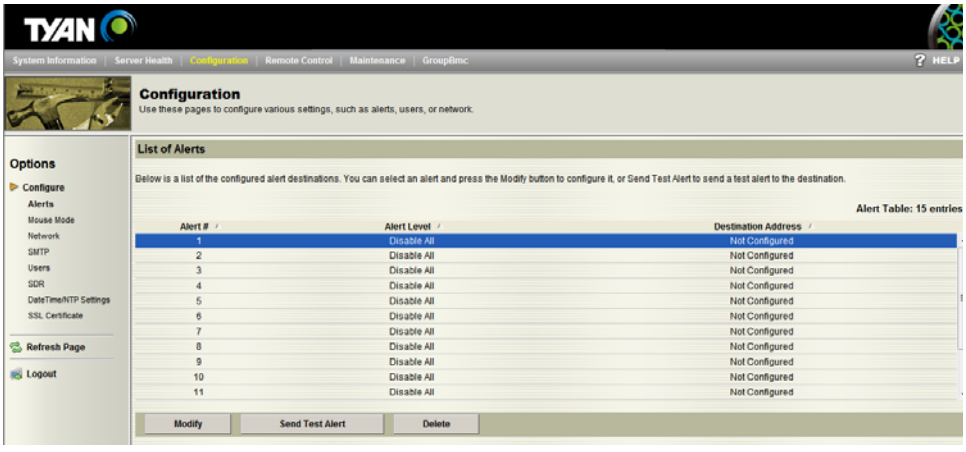


Figure 3-5. Configurtation Console Menu

Table 3-4. Configuration

Item	Description
Alerts	Select to configure or test an existing alert.
Mouse Mode	Select the type of mouse mode, absolute (Default) or relative.
Network Settings	Select to view and configure the network settings (DHCP or static).
SMTP	Select to configure alerts, users and network SMTP settings
User List	Select to add, modify or delete the current configured users list.
SDR	Select to modify, enable or disable sensor thresholds.

Table 3-4. Configuration (Continued)

Item	Description
Date Time/NTP Settings	Select to manually set the date and time settings or synchronize with a specified NTP server.
SSL Certificate	Select to upload an SSL certificate.

Remote Control

The Remote Control menu provides information about the remote management and power status of the MicroServer system.

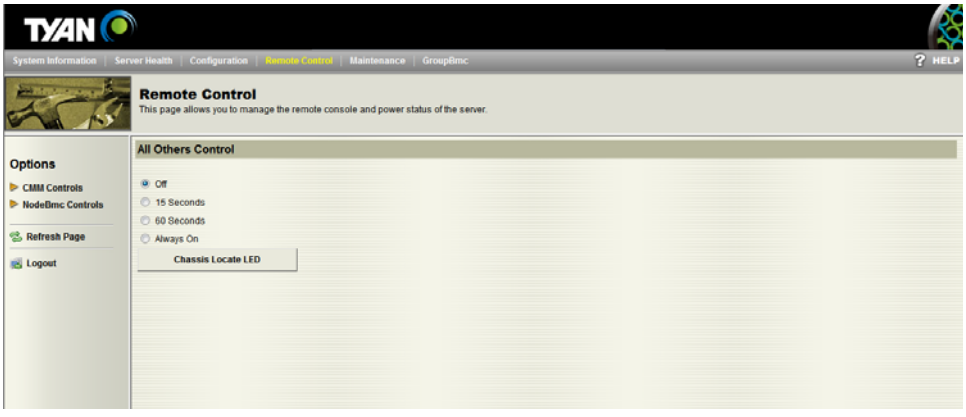


Figure 3-6. Remote Control Console Menu

Table 3-5. Remote Control

Item	Description
CMM Controls	Select to set the power status of the microserver.
NodeBMC Controls	Select to manage nodes.

Maintenance

The Maintenance menu provides information regarding the maintenance tasks available for the MicroServer system.

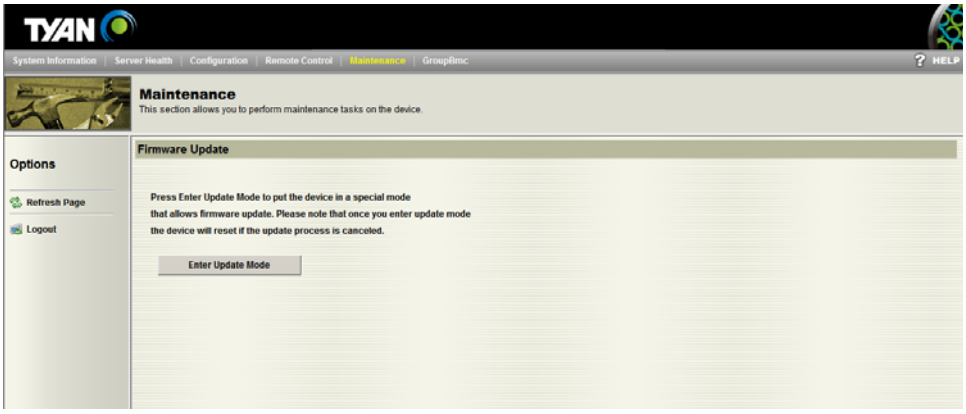

TYAN
System Information | Server Health | Configuration | Remote Control | Maintenance | GroupBmc
HELP
Maintenance
This section allows you to perform maintenance tasks on the device.
Options
Refresh Page
Logout
Firmware Update
Press Enter Update Mode to put the device in a special mode
that allows firmware update. Please note that once you enter update mode
the device will reset if the update process is canceled.
Enter Update Mode

Figure 3-7. Maintenance Console Menu

Table 3-6. Maintenance

Item	Description
Firmware Update	Select to enter the system's Update Mode. The Update Mode allows for the updating the firmware. A system reset will follow after the Update Mode.

GroupBMC

The GroupBMC menu provides information about BMC groups, such as grouped BMC, Node or User lists.

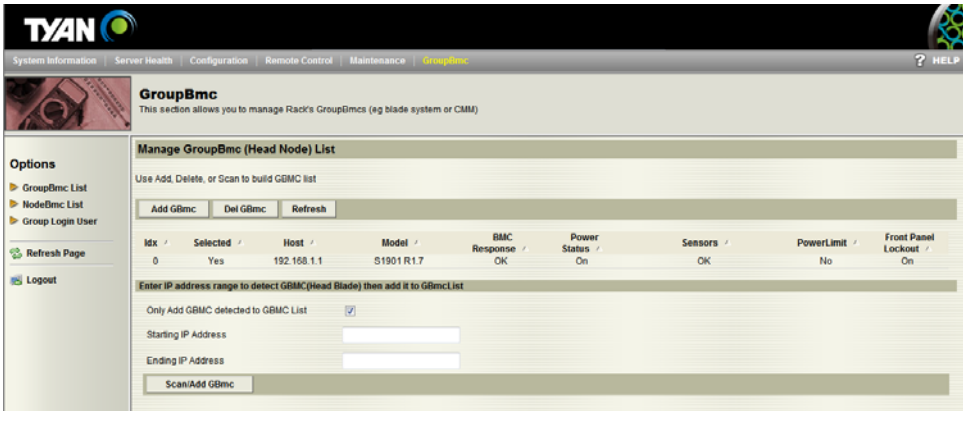


Figure 3-8. GroupBMC Console Menu

Table 3-7. GroupBMC

Item	Description
GroupBMC List	Add, delete or scan GroupBMC lists.
NodeBMC List	Select existing GroupBMC lists to manage respective nodes.
Group Login User	Select to designate user groups for grouped control functionality.

Chapter 4: Compute Blade Components

Introduction

This chapter explains how to replace components relating to the compute blade module, including the blade blank, system memory, hard drive, heat-sink, processor, bridge board and system board.

Disassembly Flowchart

The following flowchart outlines the disassembly procedures.

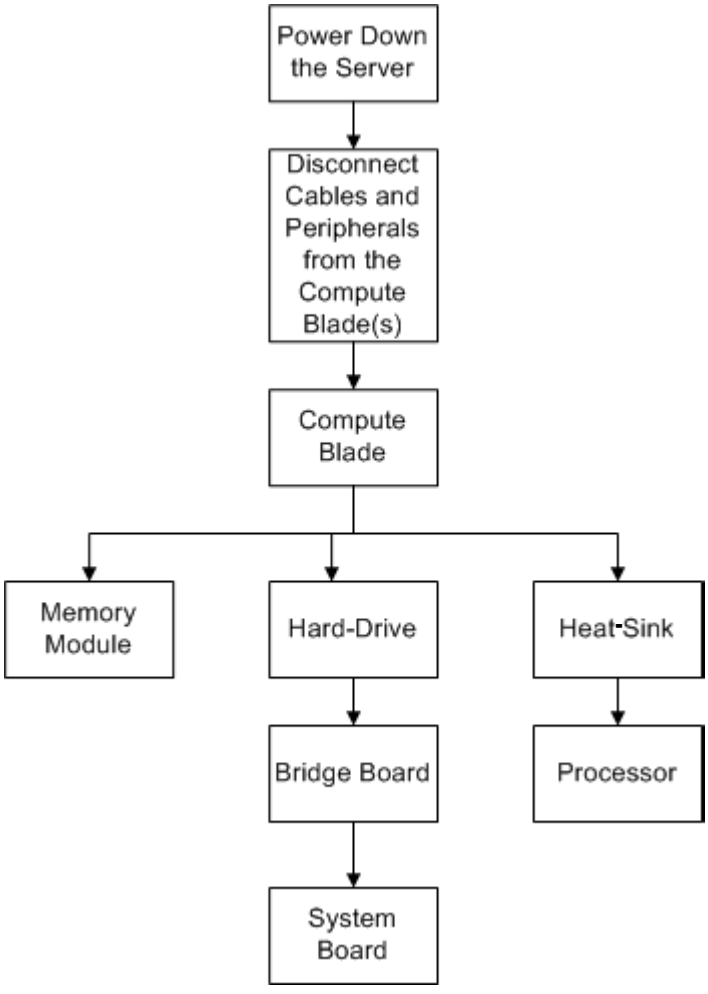
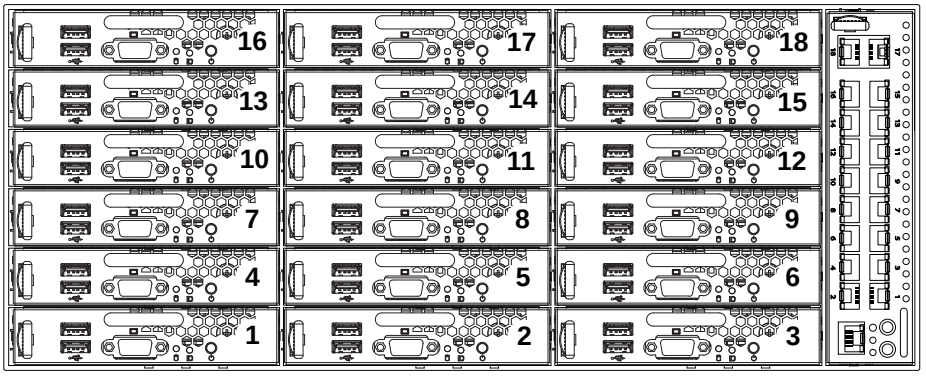


Figure 4-1. Disassembly Flowchart

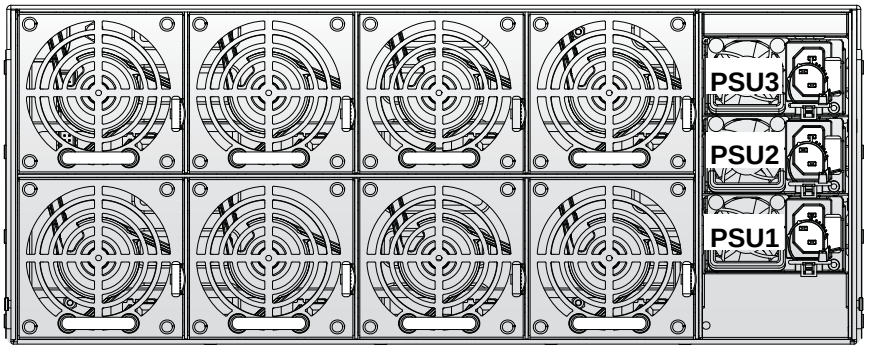
Compute Blade, Power Supply & Fan Module Order Identification

Before installing front components into the chassis, review the compute blade enumeration for each component.

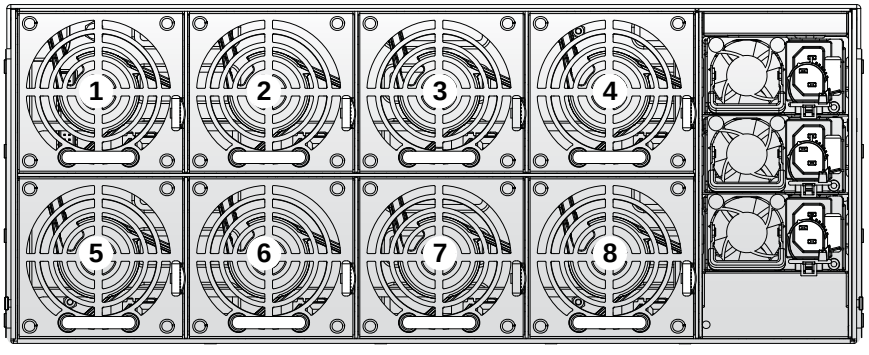
Compute Blade Numbering



Power Supply Numbering



Fan Module Numbering



Compute Blade Blanks (Option)

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

For cooling purposes, when a compute blade is removed, it should be immediately replaced with another compute blade for proper cooling and air circulation to occur.

Removing a Compute Blade Blank

Prerequisite:

Disconnect all cables and peripherals from the compute blade(s).

1. Press and hold the release latch on the compute blade blank. (Figure 4-2)
2. Pull the handle on the compute blade blank to remove it from the chassis.

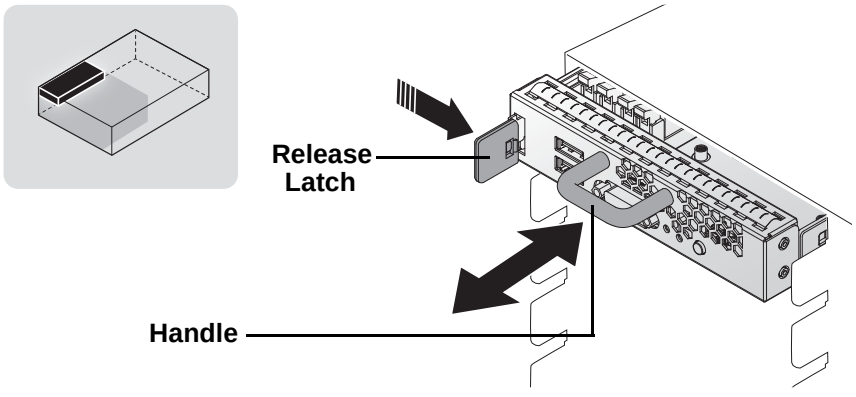


Figure 4-2. Removing a Compute Blade Blank

Installing a Compute Blade Blank

1. Align the compute blade with the chassis bay. (Figure 4-2)
2. Install the compute blade blank into the chassis until the release latch locks and the compute blade is seated properly with the chassis.

Compute Blade Modules

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

For cooling purposes, when a compute blade is removed, it should be immediately replaced with another compute blade for proper cooling and air circulation to occur.

Removing a Compute Blade

Prerequisite:

Disconnect all cables and peripherals from the compute blade(s).

1. Press and hold the release latch on the compute blade. (Figure 4-3)
2. Pull the handle on the compute blade to remove it from the chassis.

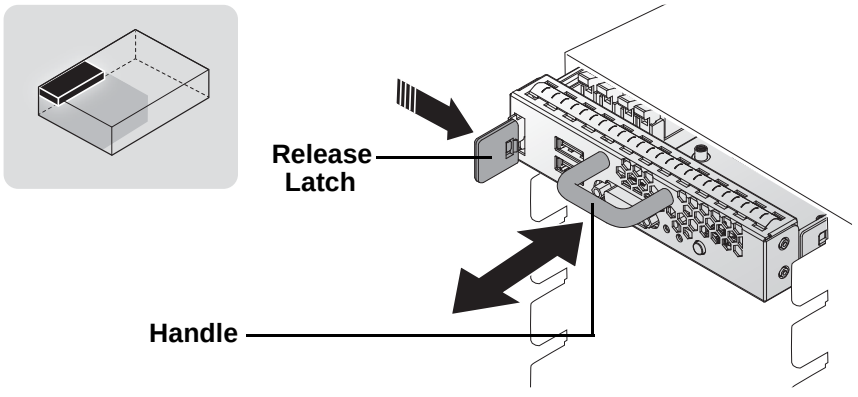


Figure 4-3. Removing a Compute Blade

Installing a Compute Blade

1. Remove the new compute blade module from the packaging.
2. Align the new compute blade module to the chassis bay. (Figure 4-3)
3. Install the compute blade into the chassis until the release latch locks and the compute blade is seated properly with the chassis.

System Memory

General Guidelines

The system board contains four (4) memory slots. Make sure the memory modules are properly installed and secured before use.

Population Rules

MEMORY POPULATION TABLE REQUIRED HERE.

Installing a Memory Module

⚠ WARNING:

Use caution when removing a memory module. The memory module can remain hot even after the system is powered down.

1. Push the memory slot locking latches outwards. (Figure 4-4)
2. Align the notch on the memory module with the socket guide.
3. Install the memory module into the desired socket.
4. Press down the memory module until the locking latches secure the memory module.
5. Install the compute blade into the chassis. See Installing a Compute Blade.

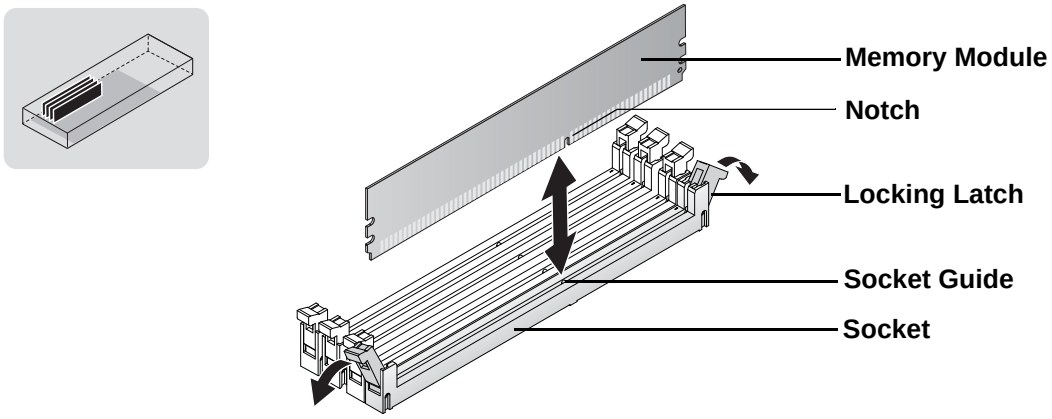


Figure 4-4. Installing a Memory Module

Removing a Memory Module

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ WARNING:

Use caution when removing a memory module. The memory module can remain hot even after the system is powered down.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade (Figure 4-4).

1. Push the memory slot locking latch outwards.
2. Remove the memory module from the socket.

Hard Drives

Installing a Hard-Drive

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to page 4-3, Removing a Compute Blade.

1. Remove hard-disk drive bracket from the blade.
2. Align and place the hard drive bracket with the hard drive. (Figure 4-5)
3. Secure the hard drive to the hard drive bracket with four (4) screws.

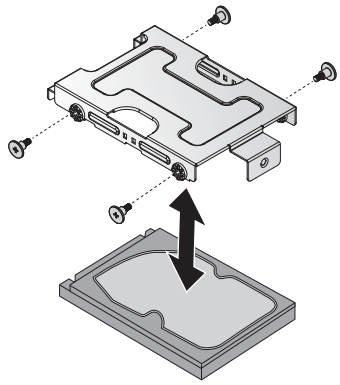


Figure 4-5. Installing a Hard Drive Bracket

4. Position and align the bracket flange with the compute blade. (Figure 4-6)
5. Place the hard drive assembly on the compute blade.

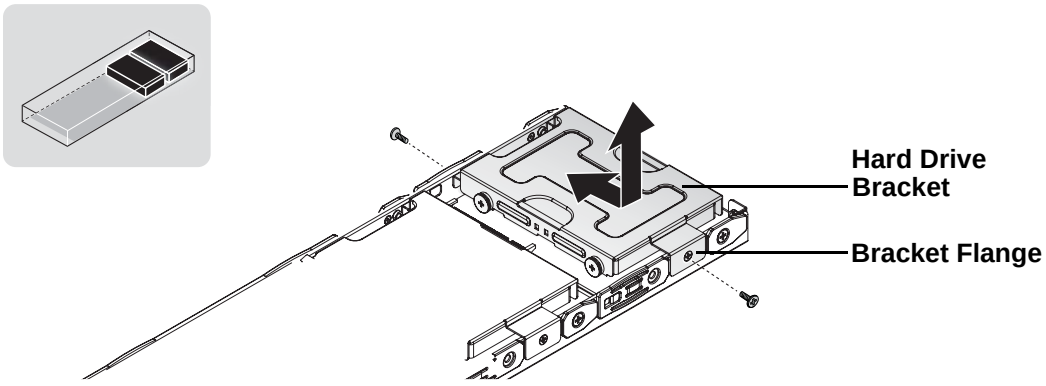


Figure 4-6. Installing a Hard Drive Module

6. Install and secure the hard drive assembly with two (2) screws.
7. Install the compute blade into the chassis. Refer to page 4-3, Installing a Compute Blade.

Removing a Hard Drive

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

1. Remove two (2) screws from the hard drive bracket. (Figure 4-7)
2. Slide and disconnect the hard drive bracket until the hard drive is disconnected from the connector.
3. Lift and remove the hard drive bracket.

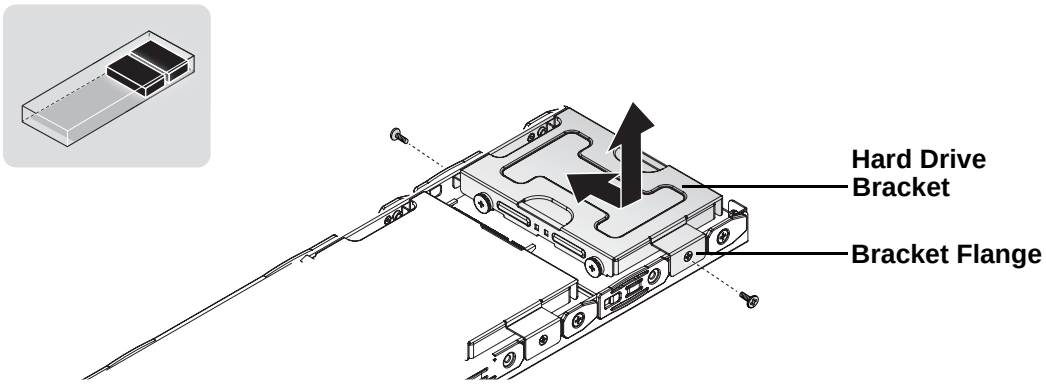


Figure 4-7. Removing a Hard Drive Module

4. Remove four (4) screws from the hard drive bracket. (Figure 4-8)
5. Remove the hard drive bracket from the hard drive module.

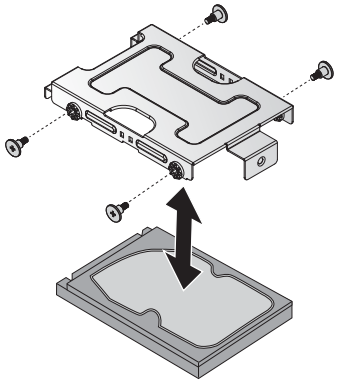


Figure 4-8. Removing a Hard Drive Bracket

Processors

General Guidelines

⚠ CAUTION:

To avoid damage to the system board:

- Do not touch the processor socket contacts.
- Do not lower the processor into the socket at an angle.

⚠ CAUTION:

To avoid damage to the processor:

- Handle the processor ONLY by the edges.
- Do not touch the contacts on the bottom of the processor.

⚠ CAUTION:

The heat-sink thermal media is not reusable. It must be replaced after removing a heat-sink or prior to installing a new processor.

Removing a Processor

FM65-B5511 Processor

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ WARNING:

There is strong pressure securing the processor locking latch to the socket. Use caution when releasing the locking lever to prevent damage or injury.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the heat-sink. Refer to Removing a Heat-Sink.

1. Release the locking lever from the socket cover tab. (Figure 4-9)
2. Rotate the locking lever on the processor socket from the locked position until the socket cover is fully open.

⚠ CAUTION:

Make sure that the locking lever is in the fully open position before installing or removing a processor. Failure to do so may result in permanent damage to the system board or the processor.

3. Remove the processor from the socket.

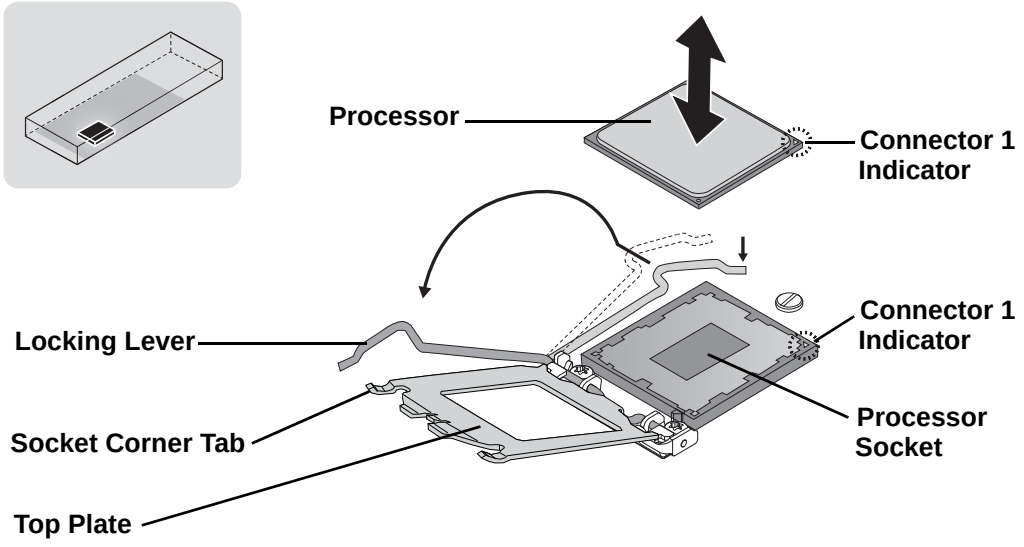


Figure 4-9. Releasing the Processor Locking Lever

FM65-B8001 Processor

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ WARNING:

There is strong pressure securing the CPU locking latch to the socket. Use caution when releasing the locking lever because it can spring up.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the heat-sink. Refer to Removing a Heat-Sink.

1. Release the locking lever from the socket tab. (Figure 4-10)
2. Pull the locking lever on the processor socket from the locked position until it is fully open.

⚠ CAUTION:

Make sure that the locking lever is in the fully open position before installing or removing a processor. Failure to do so may result in permanent damage to the system board or the processor.

3. Remove the processor from the socket.

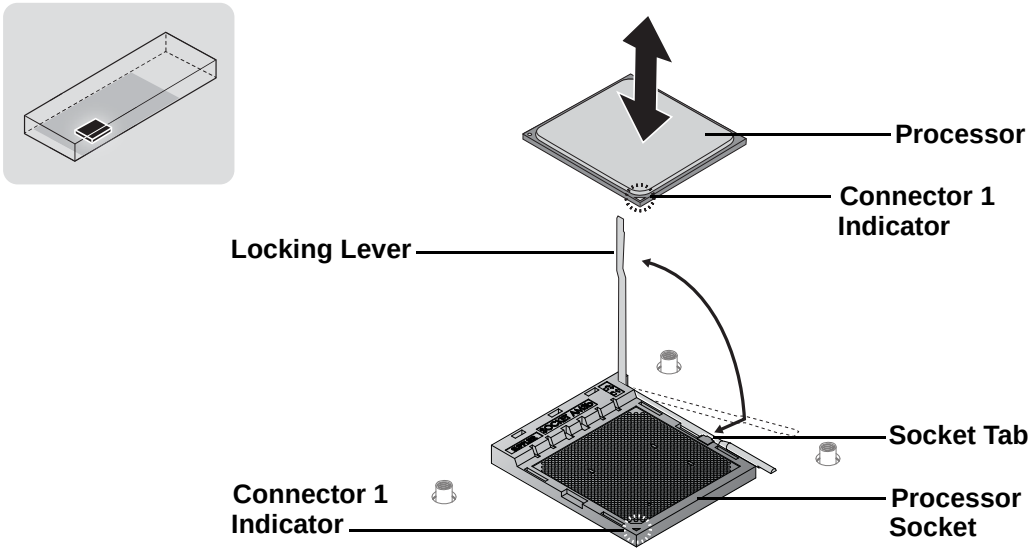


Figure 4-10. Releasing the Processor Locking Lever

Installing a Processor

FM65-B5511 Processor

⚠ CAUTION:

If the CPU is positioned in the socket incorrectly, the CPU or system board can become damaged. The use of force is not required to install the CPU into the socket.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the heat-sink. Refer to Removing a Heat-Sink.

1. Rotate the locking lever on the processor socket from the locked position until it is fully open.

⚠ CAUTION:

Make sure that the locking lever is in the fully open position before installing or removing a processor. Failure to do so may result in permanent damage to the system board or the processor.

2. Remove the socket cover from the socket.
3. Unpack the new processor and remove any protective material.
4. Align the processor over the socket and make sure the connector 1 indicators on the processor and the socket are aligned (Figure 4-9).
5. Gently place the processor in the socket.
6. Latch the lever under the top plate's corner tab, being cautious not to damage the system board with the tip of the lever.

7. Secure the locking lever to the socket corner tab.
8. Apply a small amount of thermal grease/thermal pad on the processor.

NOTE:

Always replace the thermal grease/pad before installing a processor. See the manufacturer's guidelines for your type of thermal grease/pad.

9. Install the heat-sink. See Installing a Heat-Sink.
10. Install the compute blade into the chassis. See Installing a Compute Blade.

FM65-B8001 Processor

CAUTION:

If the CPU is positioned in the socket incorrectly, the CPU or system board can become damaged. The use of force is not required to install the CPU into the socket.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the heat-sink. Refer to Removing a Heat-Sink.

1. Pull the locking lever on the processor socket from the locked position until it is fully open.

CAUTION:

Make sure that the locking lever is in the fully open position before installing or removing a processor. Failure to do so may result in permanent damage to the system board or the processor.

2. Remove the socket cover from the socket.
3. Unpack the new processor and remove any protective material.
4. Align the processor over the socket and make sure the processor connector 1 indicator is aligned with the socket connector 1 indicator. (Figure 4-10)
5. Gently place the processor in the socket.
6. Latch the lever under the socket tab, being cautious not to damage the system board with the tip of the lever.
7. Secure the locking lever to the socket tab to lock the processor socket.
8. Apply a small amount of thermal grease/thermal pad on the processor.

NOTE:

Always replace the thermal grease/pad before installing a processor. See the manufacturer's guidelines for your type of thermal grease/pad.

9. Install the heat-sink. See Installing a Heat-Sink.
10. Install the compute blade into the chassis. See Installing a Compute Blade.

Heat-Sinks

General Guidelines

⚠ CAUTION:

The heat-sink thermal grease/pad is not reusable. It must be replaced after removing a heat-sink or prior to installing a new processor.

Installing a Heat-Sink

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

⚠ WARNING:

Use caution when removing the heat-sink. The heat-sink can remain hot even after the system has powered down.

1. Unpack the new heat-sink and remove any protective material.
2. Align the heat-sink over the system board and retaining screw holes. (Figure 4-11)
3. Tighten the captive screws on the heat-sink in a diagonally opposite pattern.

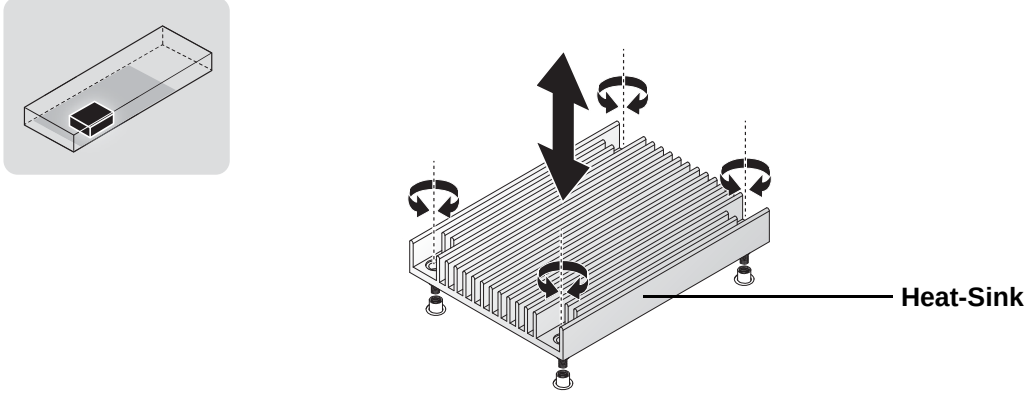


Figure 4-11. Installing the Heat-Sink

4. Install the compute blade into the chassis. See Installing a Compute Blade.

Removing a Heat-Sink

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ WARNING:

Use caution when removing the heat-sink. The heat-sink can remain hot even after the system has powered down.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

1. Loosen four (4) captive screws on the heat-sink. (Figure 4-12)
2. Lift and remove the heat-sink from the system board.

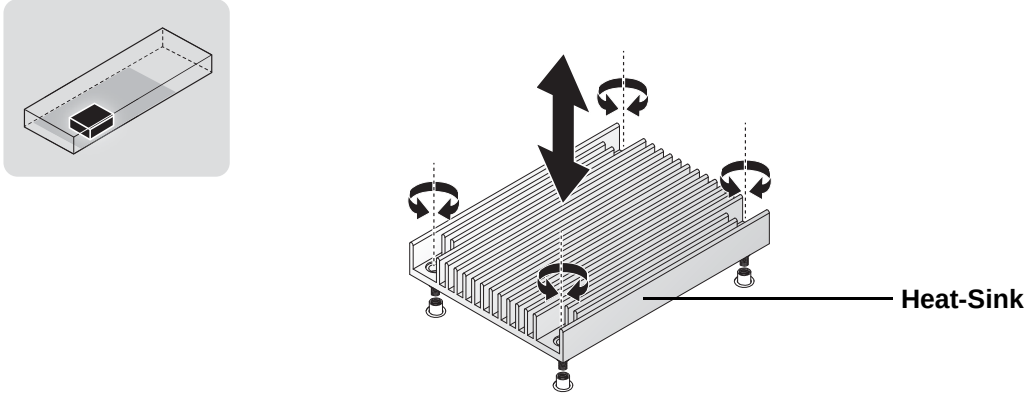


Figure 4-12. Removing the Heat-Sink

System Board

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

Removing a Bridge Board

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the hard drive. Refer to Removing a Hard Drive.

1. Remove four (4) screws from the bridge board. (Figure 4-13)
2. Slide and disconnect the bridge board from the system board.
3. Lift and remove the bridge board from the compute blade.

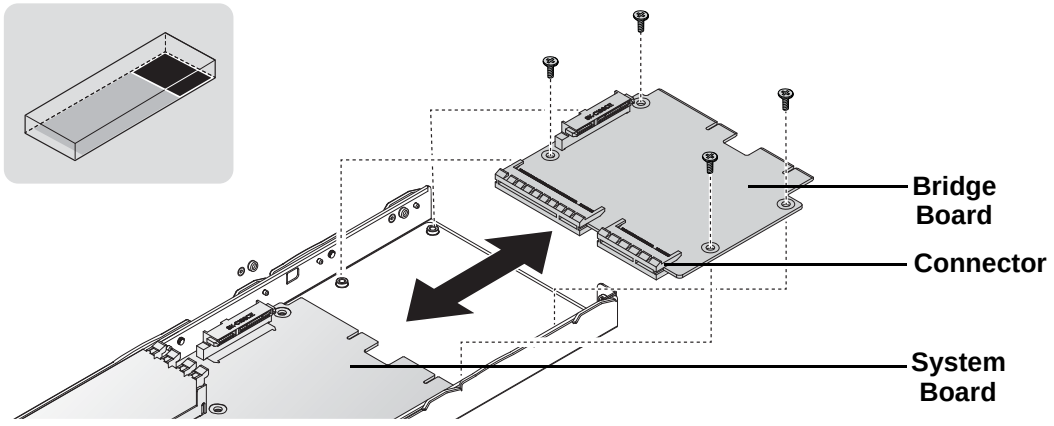


Figure 4-13. Removing the Bridge Board

Installing a Bridge Board

1. Lower the bridge board onto the compute blade. (Figure 4-13)
2. Slide and connect the bridge board connector to the system board.
3. Install and secure the bridge board with the four (4) screws.
4. Install the compute blade into the chassis. See Installing a Compute Blade.

Removing a System Board

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the compute blade(s).

Remove the compute blade. Refer to Removing a Compute Blade.

Remove the heat-sink. Refer to Removing a Heat-Sink.

Remove the bridge board. Refer to Removing a Bridge Board.

1. Remove the screws from the system board. (Figure 4-14)

   B8001 System x 4 screws

   B5511 System x 5 screws

2. Lift the rear of the system board, pivoting it at the front.
3. Pull the system board at the pivot point away from the blade housing.

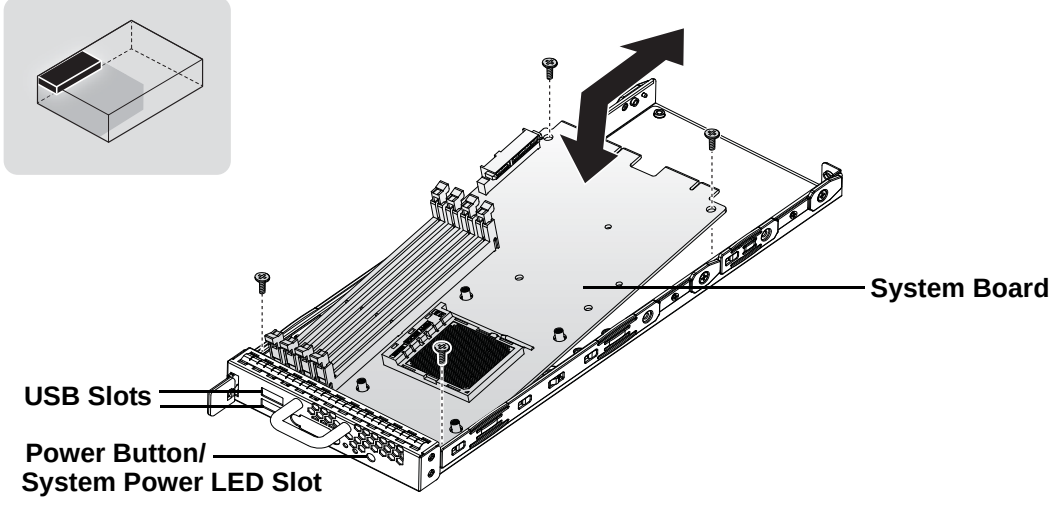


Figure 4-14. Removing the B8001 System Board

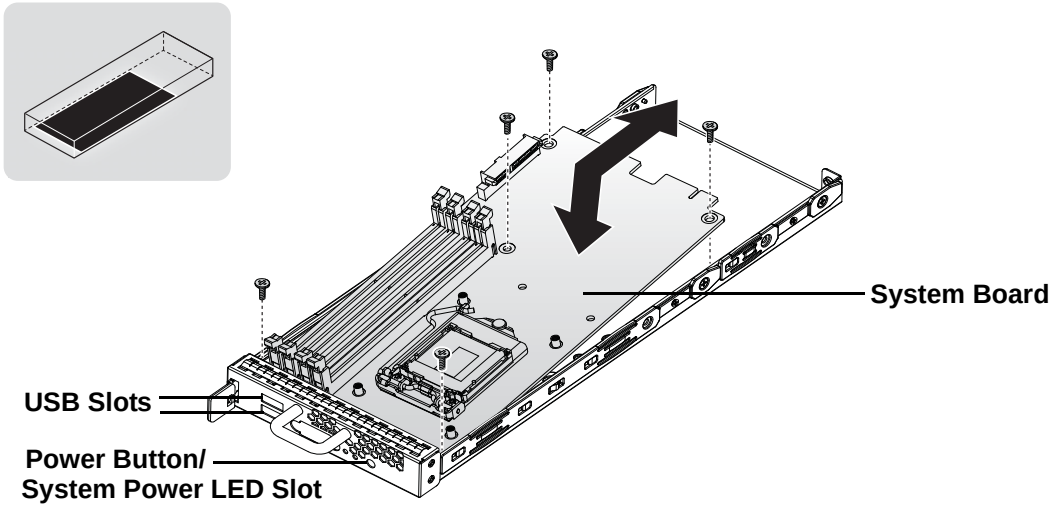


Figure 4-15. Removing the B5511 System Board

Installing a System Board

1. Align front of the system board, DIMM slots positioned in the front, with the front of the blade housing.
2. Slide the front of the system board into the housing.
3. Lower the system board into the housing making sure the screw holes on the system board align with the screw nuts on the board housing.
4. Secure the system board to the blade housing with the screws (Figure 4-14):

   B8001 System x 4 screws

   B5511 System x 5 screws
5. Install the compute blade into the chassis. See Installing a Compute Blade.

Chapter 5: Chassis Components

Introduction

This chapter explains how to replace components relating to the chassis components, including the power supply module, fan module, top cover and Pass-through / CMM module.

Disassembly Flowchart

The following flowchart outlines the disassembly procedures.

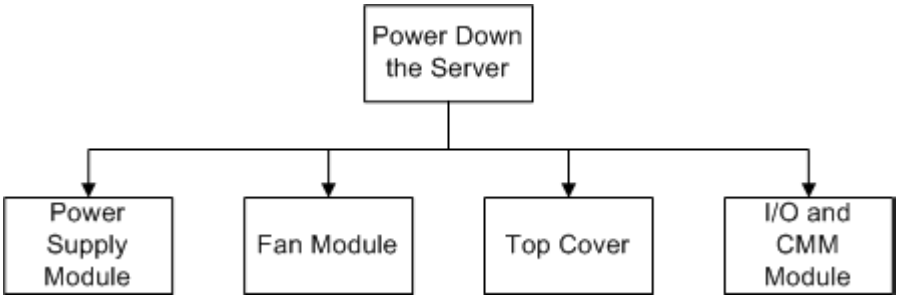


Figure 5-1. Disassembly Flowchart

Power Supply Modules

System Power Guidelines

The following table provides specifications about the power supply module.

Table 5-1. Power System Module Specifications

Information	Description
Vendor	Delta
Model	DPS-800NB B
Type	Redundant PSU
Input Range	• AC 100~127Vac / 9.2A / 50-60Hz • AC 200~240Vac / 4.4A / 50-60Hz
Output	+12V / 65A, +12VSB/2A, 800W Max.
Dimensions	(L) 196 mm x (W) 73.5 mm x (H) 40 mm (7.72 x 2.89 x 1.57 inch)

The following table provides information about the LED lights on the power supply module.

Table 5-2. LED Status

	Bicolor	
Power Supply Condition	**Green LED**	**Amber LED**
No AC power to all power supplies	OFF	OFF
Power supply critical event causing a shutdown; failure, OCP, OVP, Fan Fail	OFF	AMBER
Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan	OFF	1Hz Blink AMBER
AC present / Only 12VSB on (PS off) or PS in Smart Redundant state	1Hz Blink GREEN	OFF
Output ON and OK	ON	OFF
AC cord unplugged	0.5Hz Blink GREEN	OFF

Removing a Power Supply Module

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

Make sure that the power cable is disconnected from the power supply module (PSU) before attempting to remove the PSU.

1. Disconnect the power cable from the power supply module socket. (Figure 5-2)
2. Press and hold the release latch on the power supply module.
3. Pull the handle on the power supply module to remove it from the chassis.

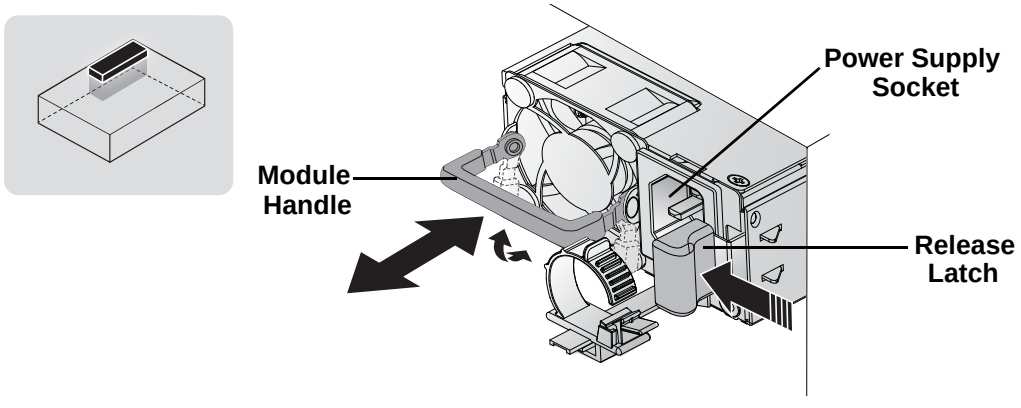


Figure 5-2. Removing a Power Supply Module

Installing a Power Supply Module

1. Install the power supply module into the chassis until the release latch locks and the power supply module is seated properly with the chassis. (Figure 5-2)
2. Connect the power cable into the power supply module socket.

Fan Modules

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

Prerequisite:

Power down the system.

Removing a Fan Module

1. Press and hold the release latch on the fan module. (Figure 5-3)
2. Pull the handle on the fan module to remove it from the chassis.

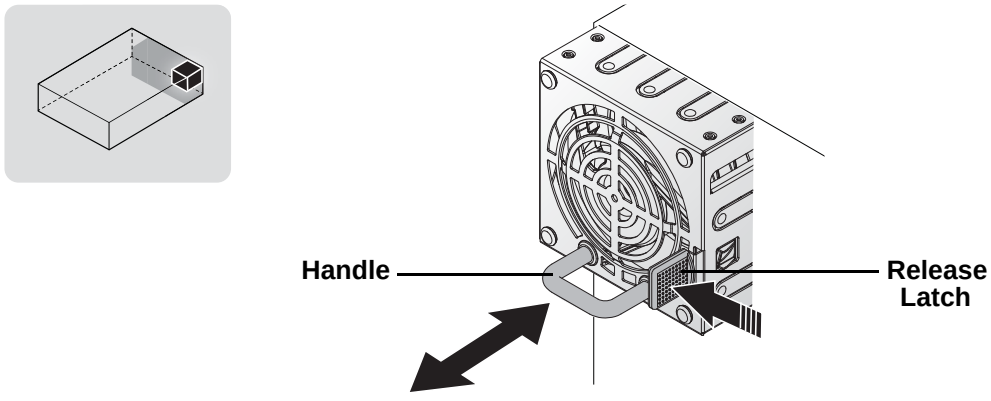


Figure 5-3. Removing a Fan Module

Installing a Fan Module

1. Align the fan module with the chassis. (Figure 5-3)
2. Install the fan module and push until the release latch locks and the fan module is seated properly with the chassis.

Opening and Closing the System

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

The top cover must be installed to maintain proper system cooling.

Prerequisite:

Power down the system.

Opening the Top Cover

1. Remove three (3) screws from the top cover. (Figure 5-4)
2. Slide the top cover until clear from the chassis.
3. Lift and remove the top cover.

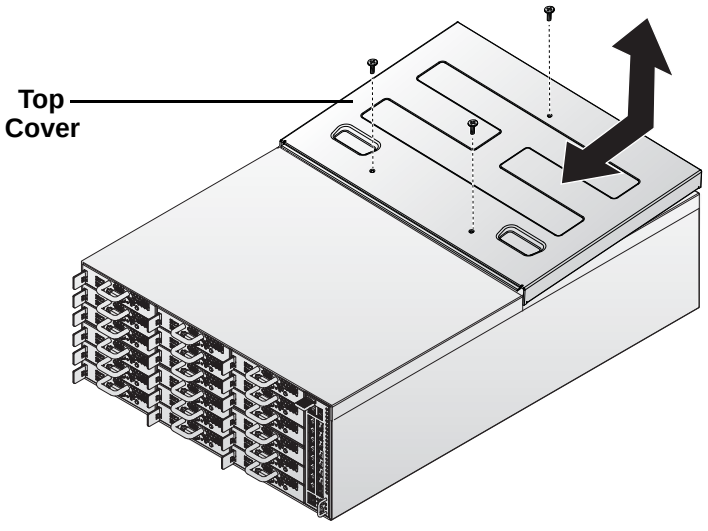


Figure 5-4. Opening the Top Cover

Closing the Top Cover

1. Place the top cover over the chassis. (Figure 5-4)
2. Slide the top cover until the bottom edge of the top cover is under the chassis and the top cover is secure to the chassis.
3. Install and secure the top cover with the three (3) screws.

Pass-through / CMM Module

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

For cooling purposes, when the Pass-through / CMM module removed, it should be immediately replaced with another Pass-through / CMM module for proper cooling and air circulation to occur.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the Pass-through / CMM module.

Removing Pass-through / CMM Module

1. Press and hold the release latch on the Pass-through / CMM module. (Figure 5-5)
2. Pull the handle on the Pass-through / CMM module to remove it from the chassis.

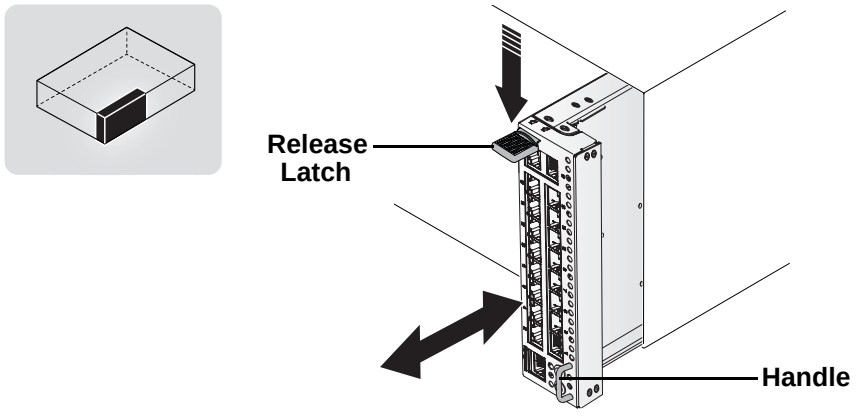


Figure 5-5. Removing a Pass-through / CMM Module

Installing Pass-through / CMM Module

1. Install the Pass-through / CMM module into the chassis until the release latch locks and the module is seated properly with the chassis. (Figure 5-5)

Removing an I/O and CMM System Board

⚠ CAUTION:

Most repairs to the Tyan MicroServer should only be performed by a professional service technician. Basic repairs and troubleshooting can be done if authorized in the product documentation or if directed by telephone or online support from Tyan. If damage has occurred due to repairs or service that is not approved by Tyan, the product warranty becomes invalid. Review all safety guidelines that are provided with the Tyan MicroServer.

⚠ CAUTION:

For cooling purposes, when the Pass-through / CMM module removed, it should be immediately replaced with another Pass-through / CMM module for proper cooling and air circulation to occur.

Prerequisite:

Power down the system.

Disconnect all cables and peripherals from the Pass-through / CMM module.

Remove the Pass-through / CMM module. Refer to Removing Pass-through / CMM Module.

1. Remove five (5) screws from the Pass-through / CMM system board. (Figure 5-6)
2. Slightly lift the rear of the system board.
3. Pull and remove the system board from the Pass-through / CMM blade.

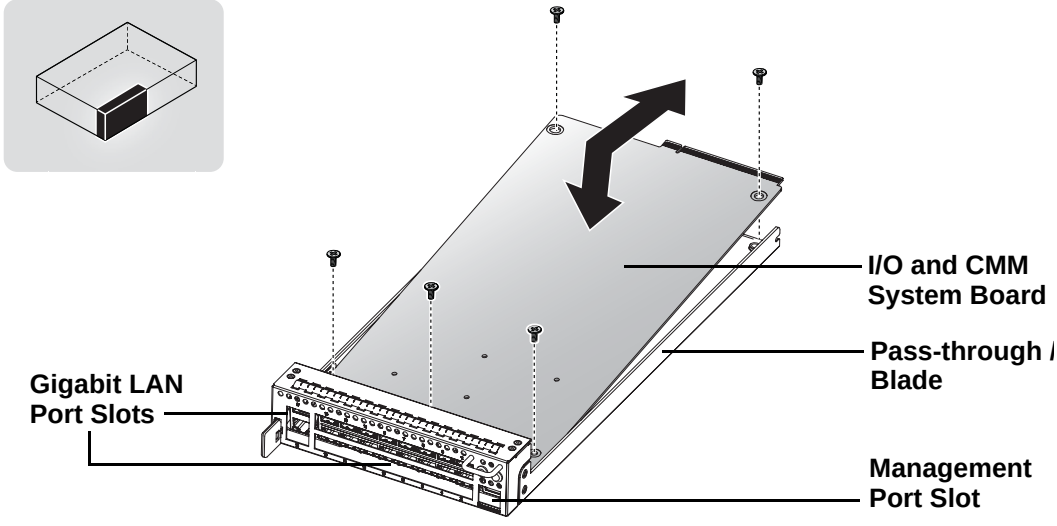


Figure 5-6. Removing the Pass-through / CMM Module System Board

Installing an Pass-through / CMM System Board

1. Holding the Pass-through / CMM system board in a slight angle, align and insert the system board connectors with the Gigabit LAN port and management port slots on the front of the Pass-through / CMM blade. (Figure 5-6)
2. Lower the system board onto the Pass-through / CMM blade.
3. Install and secure the system board to the Pass-through / CMM blade with the five (5) screws.
4. Install the Pass-through / CMM module into the chassis. See Installing Pass-through / CMM Module.

Chapter 6: Troubleshooting the MicroServer

Safety First

Start-up Routine

Checking Equipment

Troubleshooting External Connections

System Alert Messages

Troubleshooting Chassis Components

PSM

Fans

CMC

Pass-through / CMM Module

Troubleshooting Compute Blade Components

Memory

Hard Drives

Processors

System Board

System Diagnostics

Administrator Diagnostics

System Diagnostics

Using System Diagnostics

Running System Diagnostics

Testing Options

Error Messages

Chapter 7: Parts Listing

This parts listing supports the FM65-B5511 and FM65-B8001 models.

NOTE:

The illustrations in this document may differ from your model.

Appendix A: Getting Help and Support

Technical Support

If a problem arises with the Tyan MicroServer, you should first turn to your dealer for direct support. The system has most likely been configured or designed by the dealer and they should have the best idea of what hardware and software your system contains.

If this option is not available, then MiTAC International Corporation can help. Besides designing innovative and quality products for over a decade, MiTAC has continuously offered customers service beyond their expectations. Tyan's website (http://www.tyan.com) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find their latest software and operating system components to keep their systems running as powerful and productive as possible. MiTAC also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, MiTAC serves multiple market segments with the industry's most competitive services to support them.

Please feel free to contact us directly for this service at tech-support@tyan.com

Help Resources:

- See the Tyan's website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
- Contact your dealer for help before calling Tyan.
- Check the Tyan user group: alt.comp.periphs.mainboard.Tyan

TYAN® FM65-B5511/FM65-B800 User's Manual V1.0a

Document No.: D2165-100

Appendix B: Safety Information

The following section contains important safety information. Read this section thoroughly before servicing the system.

General Safety

The following are guidelines to ensure general safety:

- Maintain a clean environment during and after maintenance.
- When lifting heavy objects:
    1. Ensure you are standing on a clean stable surface to prevent slipping.
    2. Distribute the weight of the object equally between your feet.
    3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
    4. Lift by standing or by pushing up with your leg muscles to prevent additional strain on the muscles in your back. Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.
- Do not perform any tasks that will create a hazard make the equipment unsafe.
- Before you starting the system, ensure that all personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from personnel, while servicing the system.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing to prevent an electrical discharge.
- Wear safety glasses to prevent injury or a hazard to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the system.

Electrical Safety

⚠ CAUTION:

Electrical current from the system or peripherals can be hazardous. To avoid personal injury or damage to equipment, disconnect the attached power cord(s) and peripherals before you open the system, unless specifically instructed otherwise in a stated procedures.

Observe the following guidelines when working on the system.

- Know the location of the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. In the event of an electrical accident, you can operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
    - Performing a mechanical inspection

- Working near power supplies
- Removing or installing the system

- Before you start to work on the system, unplug the power cord. If the power cord cannot be unplugged, power-off the wall box that supplies power to the system and to lock the wall box in the off position.
- Never assume that power is disconnected from a circuit. Check that the power cord is disconnected.

Safety Notices

Use caution when lifting.

Table 2-1. Safe Lifting Practices

Weight	Required
≥ 18 kg (39.7 lbs)	two individuals
≥32 kb (70.5 lbs)	three individuals
≥55 kg (121.2 lbs)	four individuals

Appendix C: Glossary

Appendix D: Index

Numerics
4-Post Rack
    Installing
        Inner Rail, 2-12
        Outer Rail, 2-13
        System, 2-13
    Mounting, 2-12
    Preparing, 2-12
C
Chassis Components, 5-1
    Disassembly Flowchart, 5-1
    Introduction, 5-1
Compute Blade
    Components, 4-1
    Disassembly Flowchart, 4-1
    Enumeration, 4-2
    Features, 2-6
    FM65-B5511, 2-6
    FM65-B8001, 2-7
    Introduction, 4-1
Compute Blade Blank, 4-3
    Installing, 4-3
    Removing, 4-3
Compute Blade Modules, 4-4
    Installing, 4-4
    Removing, 4-4
F
Fan Modules, 5-4
    Installing, 5-4
    Removing, 5-4
H
Hard Drives, 4-7
    Installing, 4-7
    Removing, 4-8
Heat Sinks, 4-13
    General Guidelines, 4-13
    Installing, 4-13
    Removing, 4-13
I
I/O and CMM Module
    Installing, 5-6
    Overview, 2-10
    Removing, 5-6
    System Board
        Installing, 5-8
        Removing, 5-7
I/O Connectivity, 2-11
    I/O Port Mapping, 2-11
        Compute Blade, 2-11
        I/O and CMM Module, 2-11
Information
    General, 2-2
    Necessary, 2-1
    Precautions, 2-1
    Recommended Equipment, 2-2
    Recycling, 2-2
    Safety, 2-1
    Work Area, 2-2
M
Microserver
    About, 1-1
    features, 1-1
    Models, 1-6
    Overview, 1-1
Mid Plane
    Features, 2-8, , 2-11
P
Parts
    Accessories, 1-6
    Contens, 1-6
    List. See Catalog, 1-6
Power Supply Modules, 5-2
    Installing, 5-3
    Removing, 5-3
    System Power Guidelines, 5-2
Processors, 4-9
    General Guidelines, 4-9
    Installing, 4-11
    Removing, 4-9
S
System
    Front View, 2-4
    Internal View, 2-5
    Overview, 2-3
    Rear View, 2-4
    Top Cover
        Closing, 5-5
        Opening, 5-5

System Board, 4-15
Bridge Board
Installing, 4-15
Removing, 4-15
Installing, 4-17
Removing, 4-16
System Memory, 4-5
General Guidelines, 4-5
Installing
Memory Module, 4-5
Population Rules, 4-5
Removing
Memory Module, 4-5